1044b UIC - EAST POPLAR OIL FIELD
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East Poplar Oil Field
Enforcement Case

Region 8
13656

PRODUCTION DEPT
FILE COPY

MURPHY CORPORATION, ET AL.

EAST POPLAR UNIT WELL NO. 11

ROOSEVELT COUNTY, MONTANA

Original Set, Copy

MURPHY CORPORATION, ET AL.

EAST POPLAR UNIT WELL NO. 11

C NE NW Section 10, Township 28 No Range 51E
Roosevelt County, Montana

Elevation 2085' K.B.

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...ker did not hold. Preparing to re-test. 11-2-52-- 5797' ... 5621-29'. Two ... ton packers failed both runs after 3 minutes. Could not determine recovery. Preparing to re-test. 11-3-52-- 5797'. Re-ran DST #4 with Halliburton. 5621-29'. Straddle packers set at 5608-5633'. 5/8" bottom choke. No W.C. Tool open at 11:10 PM with good blow gas to surface in 90 minutes. Fluid to surface in 155 ~~hours~~ minutes. Flowed 45 mud, 15% salt water at rate of 2 bbls. per hour. Swabbed well 5 hrs. Swabbing approximately 6 bbls. per hour. 50% salt water. 11-4-52-- 5797'. Re-set packers. Testing B-2 zone, 5638-46'. Packers set at 5633-5658'. Open tool at 5:00 PM with weak blow. Fluid to surface in 4 hours. Flowed oil weakly by heads, unestimated amount. Swabbed well 8 hours at rate of 3 bbls. per hour. 40% salt water at first to 50 or 60%. 11-5-52-- 5797'. Pulled test tool. Rec. 2416 feet clean oil - 184' water. Ran tubing in hole with Baker Seal Nipples and set into packer. Displaced mud with water. Now displaced water with oil (see above)

HISTORY OF OIL OR GAS WELL

16—42094-1 U. S. GOVERNMENT PRINTING OFFICE

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

I.

Spudded in 6:00 A.M. September 28, 1952. 9-29-52--Drilled to 975' Schlumberger depth. Ran 28 jts. 9 5/8" O.D. 36# J-55 short T&C ~~J&L~~ casing. 950.68' landed 12.75' below R.B. HOWCO centralizers at 759' HOWCO float shoe at 963.43' Cement with 400 sacks reg. Ideal bulk cement, 6 sacks cal. chl. Bumped plug with 1300# released press. Held O.K. Cement weight 15.4#. Cement back to surface. Plug down 12:47 PM 9-29-52. Cemented around top and cellar with 14 sacks cement and 1 sack cal. chl. 10-15-52-- 5099' Drilled, coring. Pulled core # 1, 5465-89', rec. 21' anhydrite dolomite. Show in bottom foot. Tight. Pulled core #2, 5489-5509', rec. 20' with show. 10-16-52-- Drilled to 5509'. Ran D.S.T. #1 with Johnston tester, 5489-5509', $\frac{1}{2}$" bottom choke. No W.C. Open tool at 2:30 PM for 2 hrs. & 40 min. Closed 15 min. Open with good blow. Weak, steady at end of test. Rec. 182' mud cut with salt water & gas with trace of oil. 728' salt water with trace of oil & gas. 1223' salt water, slightly gas cut. IBHFP: 0 FBHFP: 1000# BHSIP: 2850# Hydro: 3050# Going in hole to run DST #2 with straddle packer. Top packer would not hold. 10-17-52-- Re-run DST #2 with Johnston tester from 5484-5502'. Straddle packers. $\frac{1}{2}$" bottom choke. No W.C. Open tool at 5:52 AM for 4 hrs. Closed 20 min. Open with weak blow, good bubble at end of test. Rec. 182' mud cut with salt water & gas with trace of oil. 297' salt water. Bottom packer held O.K. IBHFP: 0 FBHFP: 200# BHSIP: 2800# Hydro: 3025# 10-20-52-- Drilled to 5779' cutting core #4, started at 5765'. Core #3, 5600-5650'. Rec. 50'. 4' dolomite, 6' salty anhydrite, 6' anhydrite, 8' limestone with oil saturation. 9' anhydrite, 17' limestone saturated with oil. 10-21-52-- Drilled to 5797'. Core #4, 5769-97'. Rec. 26' limestone with streaks of dolomite. Show last 12'. DST # 3 with Johnston tester, 5786-5797'. $\frac{1}{2}$" bottom choke. No W.C. Open tool at 4:10 AM for 4 hrs. Closed 20 min. Open with very weak blow, same throughout test. (Gas 5220' from top) Rec. 31' gas cut mud with very small trace oil. Pressure recorder failed. 10-22-52-- Drilled to 5797'. Ran 187 jts. (5771.50') $5\frac{1}{2}$" 15.5# J-55 8 rd. thd. Range 2 German casing. Landed 11.50' below R.B. Baker float collar at 5755.14'. Baker Float shoe at 5783'. 3 Baker centralizers at 5604', 5666', and 5764'. HOWCO scratchers at 5608' to 5618', 5628' to 5633', 5647' to 5662', 5755' to 5760', 5768' to 5778'. Cemented with 200 sacks Dakota bulk cement, 4 sacks gel. Pipe rotated freely throughout cementing operations. Bumped plug with 1000# released pressure. Held O.K. Plug down 8:36 AM 10-22-52. 10-25-52-- 5797' running radio active log. Tested casing with 1000# for 30 min. Drilled float collar 5754' and shoe 5783'. Check total depth 5797'. 10-26-52-- 5797' Perforating well. Open hole jet shots 5788-5796'. Regular jet shots 5721-29 and 5738-46. Set Baker Model D packer at 5769. Preparing to complete. 10-27-52-- Perf. open hole 5788-96' 2 shots per foot. B-1, 5721-29' 4 shots per foot. B-2 5638-46' 4 shots per foot. Set Baker packer at 5769. Landed 2 3/8" tbg. on packer with tail pipe to 5796. Acidized B zone with 1000 gal. Max. pressure 2500#, Min. 2500#. Acidized C zone with 1000 gal. Max. pressure 2500# Min. 1400#. Now cleaning well into pits.

(Continued on top of page)

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EAST POPLAR UNIT NO. 11

SUPPLEMENT TO WELL HISTORY

8-19-77 Pressure well to 500 PSI - shut down. Pumped 1 barrel 28% acid down casing followed with 5 barrels water and 2 barrels SP-161 chemical (Tretolite). Chased with 400 barrels produced water. Shut in overnight.

Maximum PSI 1205#.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

The East Poplar Unit D Battery and the wells producing into the battery, EPU Nos. 6, 9, 11, and 15, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit D Lease is Murphy Oil Corporation located at P. O. Box 547, Poplar, Montana 59255. The corporate headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas, 71730.

The battery consists of a 6' x 27' vertical separator, a circulating pump with appropriate lines, and two 1,000 barrel galvanized bolted tanks. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks. An earthen pit of about 8,000 barrels capacity is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The EPU No. 6 is a flowing well. The EPU Nos. 9, 11, & 15 are pumped with a rod pump. There are 4' x 4' x 2' cellars at each wellhead with overflow lines to earthen pits capable of holding a full days fluid production in case of a leak at the well site.

The field flow lines and the well casing of each well are cathodically protected. The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The facilities are about 2.2 miles from Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery and the well cellars and overflow pits are sufficient secondary containment for these facilities.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

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The operator of the East Poplar Unit D Lease is Murphy Oil Corporation located at P.O. Box 547, Poplar, Montana 59255. The corporation headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas 71730.

The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to thelease the pumper makes a visual inspection of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January 10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The field flow lines and well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 8,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in the pit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The two 1,000 barrel tanks are galvanized and are bolted construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

The EPU No. 6 is a flowing well. The EPU Nos. 9, 11, & 15 are pumped with a rod pump. There are 4' x 4' x 2' cellars at each of the pumping wellheads with overflow lines to earthen pits capable of holding a full days production in case of a leak at the well site.

The facilities are about 2.2 miles from the Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the

distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery and the well cellars and overflow pits are sufficient seconday containment for these facilities.

The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature _____

Name _____

Title _____

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

_____
Printed Name Of Registered Professional Engineer

_____
(Seal) Signature Of Registered Professional Engineer

Date _____ Registration No. _____ State _____

Contingency Plans For An Oil Discharge

East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occuring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, thepumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Bill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

Telephone numbers and personnel to be notified in case of an oil discharge are as follows:

Phone Numbers as listed on other copies will be included on final copy.

A.F.E. No. 5

AUTHORITY FOR EXPENDITURE #11

MURPHY CORPORATION - EAST POPLAR UNIT #21

NE NW of Sec. 10, Township 28 N., Range 51 E., Roosevelt Co., Montana

WELL DRILLING & CONSTRUCTION EXPENSE	TO CSG. PT.	COMP. & EQUIP.	TOTAL COST
Drilling: Footage - Rig up & rig down	$ 3,000	$	$ 3,000
Day work- 50 days @ $850/day	36,550	5,950	42,500
Loc. survey, permit & prep.	1,000		1,000
Roads, fences, cattleguards, etc.	500		500
Mud mat. & chem., incl. oil & gas	6,000		6,000
Fuel	6,000		6,000
Water	500		500
Drilling bits, baskets, etc.	3,500	200	3,700
Drill pipe rental	4,000		4,000
Move rig in & out	2,500		2,500
Cementing casing	1,100	800	1,900
Coring materials & services	2,800		2,800
Testing services, incl. swabbing	2,400	600	3,000
Other logs, surveys & analyses	1,100	550	1,650
Perf. & set pkr.		1,500	1,500
Float equip., centralizers, etc.	125	350	475
Tubular inspection, testing, etc.		1,200	1,200
Trucking, welding & other labor	500	800	1,300
Supervision & Miscellaneous	1,500	1,000	2,500
Total est. well drlg. & const. exp.	73,075	12,950	86,025
WELL EQUIPMENT COSTS			
Casing: 1000' of 9-5/8" O.D. @ $3.30/ft.	3,300		3,300
Casing: 6000' of 5-1/2" O.D. @ $1.75/ft.		10,500	10,500
Tubing: 6000' of 2-3/8" O.D. @ $.55/ft.		3,300	3,300
Packers, etc.		500	500
Casing head & connections	600	250	850
Xmas tree & connections		1,800	1,800
Total est. well equip. costs	3,900	16,350	20,250
TOTAL EST. COST OF WELL	$ 76,975	$ 29,300	$106,275

This does not include tanks and lease equipment

APPORTIONMENT OF TOTAL ESTIMATED COSTS

APPROVAL OF EXPENDITURE

Production Department

Requested by _____

Date _____

Approved by _____

Date _____ V.P.

Executive Department

Approved by _____ Pres.

Date _____

Approved

_____

By _____

Date _____

AWS-lc
8-30-52

FILE #11

A.F.E. No. 53-1 (Prod.)

AUTHORITY FOR EXPENDITURE

MURPHY CORPORATION - EAST POPLAR UNIT #11 (Workover - Stratafrac)
NE NW of Sec. 10, Twp. 28N., Rge. 51E., Roosevelt Co., Montana

Use of pulling unit to pull rods, swab, etc. - 3 days @ $180/day	$ 540
Convert Otis blank chk. to side-door chk.	25
Use of wire line truck to seat side-door chk., 1 day	100
Stratafrac job on "B" Zones using Bradenhead Squeeze	2,500
TOTAL COST	$3,165

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Corporation	14.675953	464
Marine Oil Company	16.772517	531
Munoco Company	2.096565	66
Placid Oil Company	33.545035	1,062
Carter Oil Company	16.335860	517
Phillips Pet. Co.	16.335860	517
C. F. Lundgren	.238210	8

APPROVAL OF EXPENDITURE

PRODUCTION DEPARTMENT

Requested by _____
Date _____

Approved by _____
Date _____

APPROVED

_____

By _____

Date _____

AWS-lc
5-1-53

File

A.F.E. #9-5059

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 11
C NE NW Section 10, T28N, R51E, Roosevelt County, Montana
(Workover #1 - Supplement #1)

Pulling Unit 4 (12 hr.) days at $300	$1,200
Miscellaneous Welding and Trucking	200
Total Estimated Cost	$1,400

Supplement No. 1 is to cover the additional cost of pulling unit and miscellaneous trucking and welding on East Poplar Unit No. 11.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 440
Munoco Company	2.096565%	29
Placid Oil Company	33.545035%	470
Carter Oil Company	16.335860%	229
Phillips Petroleum Company	16.335860%	229
C. F. Lundgren	.238210%	3

APPROVAL OF EXPENDITURE

Requested by: [signature] 9-22-59 Date — Recommend Approval:

Division Production Supt. — Date — Staff Production Man — Date

Recommend Approval: — Recommend Approval:

Division Manager — Date — Budget Supervisor — Date

Approved:

Received approval from
Ed Mercado 10-5-59

Vice President-Operations — Date

MTJ:vw
9-17-59

mail to M.T. James

A.F.E. No. 7-1531

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 11
C NE NW Section 10, T28N, R51E, Roosevelt County, Montana
(Change Tubing String)

PRESENT STATUS: Pumping from the C, B-1 & 2 Zones commingled. Well Test 8-4-67 161 BFPD 68% Water Cut 52 BOPD 109 BWPD.

Tubing Record

Date	Dialog	Hydro Test	Jts. Added	Ft.	Est. Cost
1-3-66	Yes		53	1643	$2,072.00
10-3-66		Yes	5	155	$1,512.00
2-25-67		Yes	1	31	$1,030.00
9-5-67	No	No	2	62	$ 761.00
					$5,375.00

PROPOSAL: Next tubing leak change complete tubing string. (Pay out including lost oil production 3.2 tubing jobs.)

ESTIMATED COST

Pulling Unit, 20 hrs. at $33.00 Per Hr.	$ 650.00
5750' of 2-7/8" EUE J-55 Class No. 2 Tubing at $0.95 per ft.	$5,400.00
Tuboscope Salvaged tubing - 185 jts. at $2.95 per jt.	$ 550.00
Credit for Estimated 30% Class No. 2 (1725' at $0.71 per ft.)	($1,225.00)
Credit for Estimated 30% Class No. 3 (1725' at $0.47 per ft.)	($ 800.00)
Credit for Estimated 40% Class No. 4 (2300' at $0.15 per ft.)	($ 350.00)
Misc. Labor Trucking and Material	$ 400.00
Total Estimated Cost	$4,625.00

APPORTIONMENT OF TOTAL COST

Murphy Oil Corporation	31.448470%	$1,454.00
Placid Oil Company	33,545035%	$1,551.00
Humble Oil & Refining Compsny	16.335860%	$ 756.00
Drilling Specialties Company	16.335860%	$ 756.00
Munoco Company	2.096565%	$ 97.00
C. F. Lundgren	.238210%	$ 11.00

APPROVAL OF EXPENDITURE

Requested by: APPROVED:

M. T. James — 9-11-67 Date

W. J. Thornton — 9-18-67 Date

MTJ/sb
September 11, 1967

Complete 10-20-67

M T James

A.F.E. No. 1-1518-10

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 11
C NE NW SECTION 10, T28N, R51E, ROOSEVELT COUNTY, MONTANA

CHANGE TUBING STRING

PROPOSAL & JUSTIFICATION

Propose to change out complete tubing string at time of next tubing leak.

This well is pumping from the B-1, B-2 and C-3 Zones commingled and was tested 8-4-71 at the rate of 52 BOPD and 105 BWPD (67% water). Recent tubing failures are as follows:

Date	Leak	Type	Estimated Cost
1 - 8-70	2380'	Rod Cut	$ 1,562
7 -29-70	4402'	Rod Cut	669
10- 7-70	4771'	Rod Cut	1,577
1 - 6-71	2030'	Rod Cut	935
4 -28-71	3844'	Rod Cut	781
8 -25-71	4514'	Rod Cut	394
8 -28-71	5124'	Rod Cut	390
			$ 6,308

Condition No. 2 tubing with 1000' of Condition No. 3 was run on top in October, 1967; it would be uneconomical to Tuboscope.

ESTIMATED COSTS

Pulling Unit, 14 hours at $38.50 per hour	$ 550
5,550' of 2 7/8", EUE, Class No. 1 Tubing at $1.20 per foot	6,675
Salvage 5,550' of Class No. 4 (Junk) Tubing at $0.25 per foot	(1,375)
Miscellaneous Labor, Trucking and Material	400
TOTAL ESTIMATED COSTS	$ 6,250

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Oil Corporation	31.448470%	$ 1,965
Placid Oil Company	33.545035%	2,097
Humble Oil and Refining Company	16.335860%	1,021
Phillips Petroleum Company	16.335860%	1,021
Munoco Company	2.096565%	131
C. F. Lundgren	.238210%	15

APPROVAL OF EXPENDITURE

Requested:

M. T. James — 9-9-71 Date

APPROVED:

Alvin W. Simpson — 9/16/71 Date

Recommend Approval:

J. I. Johnson — 9-14-71 Date

MTJ/sb
BPD/cm
9-15-71

12-3-71

Cost #6243

A.F.E. No. 4-1511-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 11
NE NW Section 10, T28N, R51E, Roosevelt County, Montana
(Confirming A.F.E. - Move 228 Pumping Unit)

The 160 American unit that was on this well was worn out. The gear box would have had to be repaired and the unit had been welded up several times. The 160 unit was replaced with a 228 Bethlehem. A larger unit will be able to handle the fluid that is available better.

ESTIMATED COST

Roustabout Labor (Remove old pumping unit and set new unit)	$ 1,264
Winch Truck	$ 400
Misc. Material	$ 76
Total Estimated Cost	$ 1,740

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 547
Placid Oil Company	33.545035%	$ 584
Exxon Company, U.S.A.	16.335860%	$ 284
Phillips Petroleum Company	16.335860%	$ 284
Munoco Company	2.096565%	$ 37
C. F. Lundgren	.238210%	$ 4

APPROVAL OF EXPENDITURE

Requested by:

W. G. Brown — Date 5-22-74

Approved by:

A. W. Simpson — Date 5/23/74

DATE JOB COMPLETED 5-9-74
APPROXIMATE COST 1,740
BY [illegible]

sb
May 15, 1974

9 10/20/92

A.F.E. No. 2-0418-010

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 11
NE NW Section 10, T28N, R51E
ROOSEVELT COUNTY, MONTANA

PROPOSAL & JUSTIFICATION:

This well quit pumping. When the rods were pulled the pump hung up at 4050' but came loose. The tubing was stuck in the hole and had to be cut off. The casing was collapsed around the tubing and had to be swedged out. We never could get a hold of the 2-7/8" fish below the bad spot in the casing leading us to believe we were outside of the casing. Shut well in.

ESTIMATED COST

Rig	$ 16,000
Fishing Tools	25,000
Wire Line	3,000
Roustabout	600
Water Truck	400
Hydrotest	800
Supervision & Miscellaneous	1,200
TOTAL ESTIMATED COST	$ 47,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	60.363718%	$ 28,370
Doil Oil & Gas	20.965647%	9,855
Exxon Company, U.S.A.	16.335860%	7,678
Munoco Company	2.096565%	985
C.F. Lundgren	.238201%	112

APPROVAL EXPENDITURE

Requested by:

Raymond Reede 10-8-92
Raymond Reede Date

Approved by:

Sidney W. Campbell 10-13-92
Sidney Campbell Date

Paul R Ramsey 10-20-92
Paul Ramsey Date

RR/jh
October 8, 1992

DATE JOB COMPLETED
APPROXIMATE COST
BY

D - 10/9/97

FAX TO: RAY
12/3/97

A.F.E. NO. 70701
OBJECT CODE: 232910

MURPHY EXPLORATION AND PRODUCTION COMPANY
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 11
NE NW Section 10, T28N, R51E
ROOSEVELT COUNTY, MONTANA

PROPOSAL AND JUSTIFICATION:

This well is currently shut-in with collapsed casing at 4052'. The well has no further economic value. It is proposed to plug and abandon this well in accordance with State and Federal regulations. This is the only well we agreed to plug during our recent (7/1/97) shut-in status request (10 wells) with the BLM.

ESTIMATED COSTS

Rig	$ 4,000
Wireline	5,500
Cement and Services	6,000
Roustabout	2,500
Dirt Work and Reclamation	3,000
Supervision and Miscellaneous	1,000
Total Estimated Cost	$22,000

APPORTIONMENT OF TOTAL ESTIMATED COST

MURPHY EXPRO	76.937788%	$16,927
DOIL OIL & GAS	20.965647%	4,612
MUNOCO COMPANY	2.096565%	461

APPROVAL OF EXPENDITURE

Requested By:

Ray Reede Oct 1, 1997
Ray Reede Date

Approved By:

Oct 7, 1997
Date

Sidney W. Campbell 10/8/97
Date

File
E.P.U. # 11

A.F.E. No. 53-40

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 11
C SW SE Sec. 3, Twp. 28N., Rge. 51E., Roosevelt Co., Montana

WELL EQUIPMENT COSTS	TOTAL COST
Pumping unit, electric motor, rods, pump, etc., installed	$11,500
TOTAL ESTIMATED COST	$11,500

APPORTIONMENT OF TOTAL ESTIMATED COST

APPROVAL OF EXPENDITURE

Production Department

Requested by _____
Date _____

Approved by _____
Date _____

Executive Department

Approved by _____
Date _____ Pres.

Approved

_____

By _____

Date _____

EPU #11
Permit App
7 Page

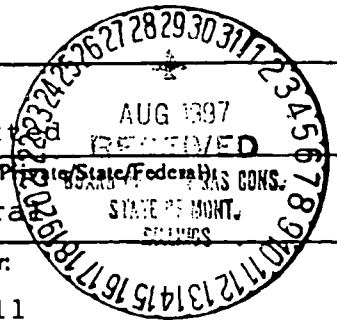
PERMIT APPLICATIONS

Form 2
Rev. 8-92

Submit In Quadruplicate To:
Montana Board of Oil and Gas Conservation
Billings or Shelby Office

ARM 36.22.307, 1003, 1004, 1011, 1013, 1103, 1222, 1301, 1306, and 1309

Sundry Notices and Report of Wells



Operator
Murphy Exploration and Production Company
Address
P.O. Box 547
City | State | Zip Code
Poplar, Montana 59255
Telephone Number (406) 768-3612 Telefax Number (406) 768-5497

Lease Name: Allotted
Lease Type (Private/State/Federal): Federal
Well Number: No. 11
Unit Agreement Name: East Poplar Unit
Field Name or Wildcat: East Poplar Unit
Section, Township, and Range: Section 10 T28N, R51E
County: Roosevelt

Location of well (1/4-1/4 section and footage measurements):
NE NW Section 10, T28N, R51E
1980' from the West line and 660' from the North line
(If directionally or horizontally drilled, show both surface and bottom hole locations)

API Number: 25 - 0 8 5 - 0 5 0 4 4
State County Well

Well Type (oil, gas, injection, other): Oil

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans	☐	Subsequent Report of Mechanical Integrity Test	☐
Notice of Intention to Run Mechanical Integrity Test	☐	Subsequent Report of Stimulation or Chemical Treatment	☐
Notice of Intention to Stimulate or to Chemically Treat	☐	Subsequent Report of Perforation of Cementing	☐
Notice of Intention to Perforate or to Cement	☐	Subsequent Report of Well Abandonment	☐
Notice of Intention to Abandon Well	☒	Subsequent Report of Pulled or Altered Casing	☐
Notice of Intention to Pull or Alter Casing	☐	Subsequent Report of Drilling Waste Disposal	☐
Notice of Intention to Change Well Status	☐	Subsequent Report of Production Waste Disposal	☐
Supplemental Well History	☐	Subsequent Report of Change in Well Status	☐
Other (specify) _____	☐	Subsequent Report of Gas Analysis (ARM 36.22.1222)	☐
_____	☐	_____	☐

Describe Proposed or Completed Operations:
Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

This well is currently shut in with the casing collapsed at 4052'. It is proposed to set a CIBP at 4000' and dump 3 sacks of cement on top of it. The 5-1/2" casing will be perforated at 925' and a 75 sack balanced plug will be pumped. A 6 sack plug will be pumped inside the 5-1/2" casing at the surface. A 13 sack plug will be pumped down the 5-1/2" annulus using 1" pipe. The wellhead will be cut off 4' below the surface and a 1/4" steel plate will be welded over it.

NOTIFY SERVICE COMPANY TO FORWARD CEMENT TICKETS AS REQUIRED BY RULE 36.22.1241.

BOARD USE ONLY

Approved SEP - 2 1997
Date

Accepted for record purposes only

Name Title

The undersigned hereby certifies that the information contained on this application is true and correct:

August 26, 1997 Raymond Reede
Date Signed (Agent)

Raymond Reede District manager
Print Name & Title

3160
I37IND12897

Murphy Exploration & Production Company
Indian Lease I37-IND-12897
East Poplar Unit Well No. 11
NE NW Sec. 10, T28N-R51E
Roosevelt County, Montana

CONDITIONS OF APPROVAL

1. This office must be notified at least 48 hours in advance of the start of plugging operations at (406) 232-7001.

2. The most recent gas analysis submitted on the EPU indicates an H_2S concentration of 24,000 ppm. Please note that for operations where H_2S can reasonably be expected in concentrations in excess of 100 ppm, all applicable provisions of Onshore Oil & Gas Order No. 6, Hydrogen Sulfide Operations, must be followed.

3. The wellbore must be stabilized with fluids of a weight adequate to ensure that the wellbore neither gives up or takes fluid while the cement plugs are being placed. Should the wellbore exhibit signs of instability, you may be required to tag one or more plugs to verify correct placement.

4. In addition to the procedures specified in the proposed plugging program, you must isolate the Lakota and deeper formations from the shallower zones. This may be accomplished by perforating the casing at approximately 3,400 ft., setting a cement retainer at approximately 3,350 ft., squeezing with approximately 50 sx, and capping the cement retainer with 4 sx of cement. Should you have another method that will accomplish the same objective, you may contact this office at (406) 232-7001 for approval of a revision to this approved plan.

5. The abandonment marker must be a metal post (minimum 4 inch diameter, capped, minimum 4 feet above ground) set in concrete (or welded onto a steel plate which is welded on the surface casing) and exhibit the information required by 43 CFR 3162.6. If a steel plate is used, a weep hole must be left in the plate.

6. A Subsequent Notice of Abandonment on Form 3160-5 must be submitted to this office within 30 days following completion of the well abandonment in accordance with 43 CFR 3160. This Sundry Notice must show the location of the plugs, the amount of cement in each plug, the amount of casing left in the hole and the status of reclamation.

7. Upon completion of the reclamation operations, you must notify this office via Sundry Notice (Form 3160-5) that the reclamation work is ready for inspection. Final abandonment will be approved when the required reclamation work has been completed to the satisfaction of the BIA. Bond liability for the location will be terminated after approval of final abandonment.

Form 3160-5
(November 1994)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No.
1-37-IND-12897

6. If Indian, Allottee or Tribe Name
Fort Peck

7. If Unit or CA/Agreement, Name and/or No.
East Poplar Unit

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
EPU No. 11

2. Name of Operator
Murphy Exploration and Production Company

9. API Well No.
25-085-05044

3a. Address
P.O. Box 547, Poplar, Mt

3b. Phone No. *(include area code)*
406-768-3612

10. Field and Pool, or Exploratory Area
East Poplar unit

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
NE NW Section 10, T28N, R51E
1980' from the West line and 660' from the North line

11. County or Parish, State
Roosevelt, Montana

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☒ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

This well is currently shut in with the casing collapsed at 4052'. It is proposed to set a CIBP at 4000' and dump 3 sacks of cement on top of it. The 5-1/2" casing will be perforated at 925' and a 75 sack balanced plug will be pumped. A 6 sack plug will be pumped inside the 5-1/2" casing at the surface. A 13 sack plug will be pumped down the 5-1/2" annulus using 1" pipe. The wellhead will be cut off 4' below the surface and a 1/4" steel plate will be welded over it.

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*
Raymond Reede

Title
District Manager

Signature
Raymond Reede

Date
August 26, 1997

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title TEAM LEADER

Date SEP 30 1997

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office
See Attached for Conditions of Approval

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

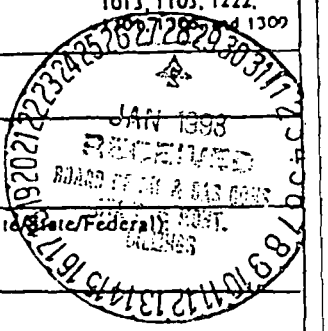
(Instructions on reverse)

Form 2
Rev. 8-92

Submit In Quadruplicate To:
Montana Board of Oil and Gas Conservation
Billings or Shelby Office

ARM 36.22.307, 1003, 1004, 1011, 1013, 1103, 1222, 1309

Sundry Notices and Report of Wells



Operator
Murphy Exploration and Production Company

Address
P.O. Box 547

City | State | Zip Code
Poplar | Montana | 59255

Telephone Number (406) 768-3612 | Telefax Number (406) 768-5497

Lease Name: Allotted

Lease Type (Private/State/Federal): Federal

Well Number: No. 11

Unit Agreement Name: East Poplar Unit

Field Name or Wildcat: East Poplar Unit

Location of well (1/4-1/4 section and footage measurements):
NE NW Section 10, T28N, R51E
1980' from the WEst line and 660' from the North line.
If directionally or horizontally drilled, show both surface and bottom hole locations)

Section, Township, and Range: Section 10, T28N, R51E

API Number: 25 [redacted] 0 8 5 [redacted] 0 5 0 4 4 [redacted]
State | County | Well

Well Type (oil, gas, injection, other): Oil

County: Roosevelt

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans	☐	Subsequent Report of Mechanical Integrity Test	☐
Notice of Intention to Run Mechanical Integrity Test	☐	Subsequent Report of Stimulation or Chemical Treatment	☐
Notice of Intention to Stimulate or to Chemically Treat	☐	Subsequent Report of Perforation of Cementing	☐
Notice of Intention to Perforate or to Cement	☐	Subsequent Report of Well Abandonment	☒
Notice of Intention to Abandon Well	☐	Subsequent Report of Pulled or Altered Casing	☐
Notice of Intention to Pull or Alter Casing	☐	Subsequent Report of Drilling Waste Disposal	☐
Notice of Intention to Change Well Status	☐	Subsequent Report of Production Waste Disposal	☐
Supplemental Well History	☐	Subsequent Report of Change in Well Status	☐
Other (specify) _____	☐	Subsequent Report of Gas Analysis (ARM 36.22.1222)	☐
_____	☐	_____	☐

FOR INFORMATION ONLY

Describe Proposed or Completed Operations:
Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

Perforate 3400-3401', 4 shots. Perforate 925-926', 4 shots per foot. Perforate 60', 2 shots. Set cement retainer at 3350'. Sting into retainer, get injection rate of 2 BPM at 700#. Pump 5 barrels fresh water. Mix 55 sacks cement with retarder, pump 51 sacks into retainer. Pull out of retainer and leave 4 sacks on top of retainer. Run packer and set at 735', get injection rate. Mix 75 sacks, pump plug 715' to 925', inside and outside of 5-1/2" casing. Release packer and pull. Pump 20 sack plug down 9-5/8" casing and up 5-1/2" casing. Tag cement at 11' inside 5-1/2" casing. No dry hole marker will be errected on this location. Reclamation work will be done when weather permits.

BOARD USE ONLY

Approved JAN 28 1998
Date

Accepted for record purposes only

Name | Title

The undersigned hereby certifies that the information contained on this application is true and correct:

January 20, 1998 Raymond Reede
Date | Signed (Agent)

Raymond Reede District Manager
Print Name & Title

Form 3160-5
(November 1994)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No.
I-37-IND-12897

6. If Indian, Allottee or Tribe Name
Fort Peck

7. If Unit or CA/Agreement, Name and/or No.
East Poplar Unit

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
EPU No. 11

2. Name of Operator
Murphy Exploration and Production Company

9. API Well No.
25-085-05044

3a. Address
P.O. Box 547, Poplar, Mt.

3b. Phone No. *(include area code)*
406+768-3612

10. Field and Pool, or Exploratory Area
East Poplar Unit

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
NE NW Section 10, T28N, R51E
1980' from the West line and 660' from the North line

11. County or Parish, State
Roosevelt County, Mt.

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☒ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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Perforate 3400-3401', 4 shots. Perforate 925-926', 4 shots per foot. Perforate 60', 2 shots. Set cement retainer at 3350'. Sting into retainer, get injection rate of 2 BPM at 700#. Pump 5 barrels fresh water. Mix 55 sacks cement with retarder, pump 51 sacks into retainer. Pull out of retainer and leave 4 sacks on top of retainer. Run packer and set at 735', get injection rate. Mix 75 sacks, pump plug 715' to 925', inside and outside of 5-1/2" casing. Release packer and pull. Pump 20 sack plug down 9-5/8" casing and up 5-1/2" casing. Tag cement at 11' inside 5-1/2" casing. No dry hole marker will be errected on this location. Reclamation work will be done when weather permits.

JAN 1998
Bureau of Land Management
Miles City, Montana

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*
Raymond Reede

Title
District Manager

Signature
Raymond Reede

Date
January 21, 1998

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by
Bruce Breech

Title ADM - Minerals

Date JAN 30 1998

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office See Attached for Conditions of Approval

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on reverse)

OP

3160
I37IND12897

Murphy Exploration & Production Company
Indian Lease I37-IND-12897
East Poplar Unit Well No. 11
NE NW Sec. 10, T28N-R51E
Roosevelt County, Montana

CONDITIONS OF APPROVAL

1. Notify BIA (406-768-5112) 48 hours before starting reclamation work.
2. The lease area must be cleaned up of all debris, garbage and equipment. Nonhazardous material must be disposed of in an approved landfill and any hazardous wastes must be disposed of in an EPA approved facility.
3. All surface flowlines and utility poles associated with this well must be removed. All buried flowlines must be removed or drained, purged with fresh water and plugged at least 3 feet below ground level.
4. Surfacing material must be removed from the access road and well pad and any culverts must be removed from the access road.
5. The access road and well pad must be recontoured to blend in with the surrounding terrain. Water bars must be constructed on the contour on all 3:1 or steeper slopes. Water bars must extend onto undisturbed ground.
6. The recontoured areas must be drill seeded, unless the well site is in an agricultural field, before May 15, 1998 with the following mixture:
   6lbs/acre (PLS) western wheatgrass
   5lbs/acre (PLS) slender wheatgrass
   4lbs/acre (PLS) green needlegrass
   2lbs/acre (PLS) dryland alfalfa
   Seed must be drilled on the contour at 6 inch row spacing at a depth of 1`/2 to 3/4 inch.
7. The areas must be fenced after seeding with 4 strands of barbed wire, metal line posts and wood corner and brace posts. The fence must be maintained to keep out livestock until the reclamation work has been approved.
8. Weeds must be controlled along the access route and well site until reclamation work has been approved. Weed control must be in accordance with a plan approved by the BIA.
9. Upon completion of the reclamation operations, you must notify this office via Sundry Notice (Form 3160-5) that the reclamation work is ready for inspection. Final abandonment will be approved when the required reclamation work has been completed to the satisfaction of the BIA. Bond liability for the location will be terminated after approval of final abandonment.

Form 3160-5
(November 1994)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires July 31, 1996

SUNDRY NOTICES AND REPORTS ON WELLS

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☒ Oil Well ☐ Gas Well ☐ Other

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406+768-3612

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☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other _____
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	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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JAN 1998
Bureau of Land Management
Miles City, Montana

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*
Raymond Reede

Title
District Manager

Signature
Raymond Reede

Date
January 21, 1998

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by
Title ADM - Minerals
Date JAN 30 1998

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

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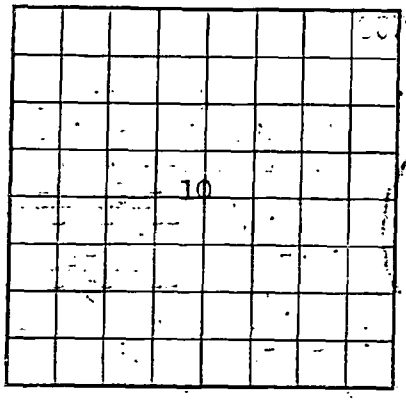
(Instructions on reverse)

1/28/98

Budget Bureau No. 42-R355.2.
Approval expires 12-31-52.

Form 9-330 R 51E

U. S. LAND OFFICE Billings
SERIAL NUMBER 1-37-ind-12897
LEASE OR PERMIT TO PROSPECT



LOCATE WELL CORRECTLY

RETURNED DISTRICT OFFICE

RECEIVED JAN 20 1953 U.S. GEOLOGICAL SURVEY CASPER, WYOMING

JAN 19 1953

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company Murphy Corporation Address Box 76, Poplar, Montana
Lessor or Tract East Poplar Unit Field East Poplar State Montana
Well No. 11 Sec. 10 T. 28 R. 51 Meridian Principal County Roosevelt
Location 660 ft. {N/S} of N Line and 1980 ft. {E/W} of W Line of Sec. 10 Elevation 2085 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Harold Nielsen
Date December 10, 1952 Title District Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling September 28, 19 52 Finished drilling October 21, 19 52

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from A 5491 to 5501 No. 4, from C 5788 to 5796
No. 2, from B-1 5620 to 5629 No. 5, from to
No. 3, from B-2 5638 to 5653 No. 6, from to

IMPORTANT WATER SANDS

No. 1, from to No. 3, from to
No. 2, from to No. 4, from to

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
9 5/8	36	8 rd.	J&L	975'	HOWCO		5788	5796	
5 1/2	15.5	8rd.	German	5771.50	Baker		5721	5729	
							5738	5746	

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	950.68	400	Pump & Plug		6 sacks Cal Chloride
5 1/2	5755.14	200	Pump & Plug		4 sacks Gel.

PLUGS AND ADAPTERS

Heaving plug—Material Length Depth set
Adapters—Material Size

SHOOTING RECORD

Size shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

FOLD | MARK

5/8	5760.66	400	Pump & Plug		6 sacks Cal Chloride
5 1/2	5755.14	200	Pump & Plug		4 sacks Gel.

FOLD | MARK

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		Jet	2 S.P.F.	10-27	5788-96	
		Jet	4 S.P.F.	10-27	5721-29	
		Jet	4 S.P.F.	10-27	5736-46	

TOOLS USED

Rotary tools were used from 0 feet to 5797 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

....., 19.... Put to producing October 28, 19 52

The production for the first 24 hours was 100 barrels of fluid of which 82 % was oil; ..... % emulsion; 18 % water; and ..... % sediment. Gravity, °Bé. .....

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

J. E. Yarbrough, Driller John Garrett, Driller

K. E. Havlan, Driller ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET Formation Tops	FORMATION
		1139	Eagle
		1992	Niobrara
		2142	Carlisle
		2343	Greenhorn
		2541	Groneras
		2694	V. Muddy
		2912	Muddy Sd.
		2953	Skull Creek
		3123	Dakota Silt
		3530	Morrison
		3918	Swift
		4094	Rierdon
		4260	Piper Shale
		4348	Piper Limestone
		4402	Gypsum Springs
		4602	Spearfish
		4731	Amsden
		4988	Heath
		5123	Kibbey
		5287	Kibbey Limestone
		5365	Madison
		5491	A Zone
		5620	B-1 Zone
		5638	B-2 Zone
		5788	C Zone Porosity

(OVER)

FORMATION RECORD—Continued

FROM—	TO—	TOTAL FEET	FORMATION

Part III. (continued)

11-7-52-- Released Rig 5:00 P.M. 11-8-52-- Swabbed into test tank, 40 barrels oil, 30 barrels water, in 7½ hours. Fluid level remained at 1500' from top. Flowed 10 barrels 15 hours. 1 per cent BS&W.

Part II.
(Continued)

10-29-52-- 5797'. Preparing to kill well and make trip with tubing to change baker seal rings and re-acidize "C" zone. Test of 3 zone flowed 20 bbls. in 7 hrs. with 1% water. Reversed out and found 5,000' clean oil and 768' salt water.
10-31-52-- 5797'. Preparing to swab. Re-acidized C zone with 3000 gal. acid. Maximum pressure 3000# Min. 2700#. Flowed 3 bbls. OPH with 10 to 50% acid, wash and salt water. 11-1-52-- 5797'. DST #4 with Johnston tester, 5621-5629' with straddle packers set at 5614-5624. 3/8" bottom choke. No W.C. Tool open at 5:00 AM with weak blow. Fluid to surface in 310 minutes. Flowed light heads 10:40 oil and gas cut mud. Dead at 12:00. Closed tool at 1:00 PM shut in 15 minutes. Rec. 1288' oil and gas cut mud, 1104' muddy salt water, 322' of white salt water. IBHFP: 700# FBHFP: 2700# BHSIP: 2700# Hydro: 3250# Lost mud while resetting packer. Bottom packer did not hold. Preparing to re-test. 11-2-52-- 5797' Re-run DST #4, 5621-29'. Two top packers failed both runs after 3 minutes. Could not determine recovery. Preparing to re-test. 11-3-52-- 5797'. Re-ran DST #4 with Halliburton, 5621-29'. Straddle packers set at 5608-5633'. 5/8" bottom choke. No W.C. Tool [illegible] blow gas to surface in 90 minutes. Fluid [illegible]

MURPHY CORPORATION

EAST POPLAR UNIT WELL NO. 11

LOCATION:	C NE NW Section 10, Township 28North, Range 51 East
ELEVATION:	2085' K.B.
SPUDDED:	September 28, 1952
COMPLETED:	November 7, 1952
TOTAL DEPTH:	5798 Schlumberger = 5797 Driller = 5797 Lane-Wells

Sept. 28:	Spudded and drilled to 975' with 12¼" jet rock bit.
Sept. 29-30:	Ran Schlumberger ES. Set 950.68' of 9-5/8" casing at 963.43' and cemented with 400 sacks regular cement. Bumped plug with 1200#; held okay. Plug down at 12:47 p.m. WOC.
October 1-14:	Drilled from 975' to 5465' with 8-3/4" rock bit. Cut and pulled Core No. 1, 5465-5489, rec. 21'.
October 15:	Cut and pulled Core No. 2, 5489-5509', rec. 20'. Ran DST #1, 5489-5509.
October 16:	Ran DST #2, 5484-5502, but top packer failed.
October 17-18:	Reran DST #2, 5484-5502. Drilled from 5509 to 5560' with 7-7/8" bit. Cut and pulled Core No. 3, 5600-5650', rec. 50'.
October 19	Drilled from 5650-5765'. Steel line measurement 5765-5769, correction.
October 20-21:	Cut and pulled Core No. 4, 5769- 797, rec. 26'. Ran DST #3, 5786-5797
October 22-24:	Set 5771.50' of 5½" casing at 5783' with 200 sacks cement. Bumped plug with 1000#; held okay. Plug down at 8:36 a.m. WOC.
October 25:	Ran Lane Wells gamma ray-neutron log. Well undergoing completion operations as set forth under "Completion Data."

EAST POPLAR UNIT WELL NO. 11

DRILLING BIT RECORD *

9-28-52 to 11-8-52

No.	Size	Type	Serial	Depth Cut	Feet	Hours
	12¼	OSC3J	Rerun	975	975	
1	8-3/4	OSC-1	10596	2715	1740	19
2	8-3/4	OSC-J	62520	3390	675	20
3	8-3/4	OSQ-2	46810	3632	242	21½
4	8-3/4	OSQ-2	47335	3887	255	19½
5	8-3/4	OSQ-2	28024	4150	263	28½
6	8-3/4	OSQ-2	47054	4395	245	26
7	8-3/4	OSC-J	92322	4648	253	26¼
8	8-3/4	OSQ-2	62719	4851	203	20
9	8-3/4	OSQ-2	62716	4918	67	7
10	8-3/4	OSQ-2	47055	4958	40	4-3/4
11	8-3/4	OWV	44461	5012	54	6½
12	8-3/4	OSQ-2	62704	5115	103	11
13	8-3/4	OSQ-2	62738	5266	151	20
14	8-3/4	OSQ-2	47337	5378	112	14
15	8-3/4	OSQ-2	59950	5465	87	
	7-7/8	DC		5509	44	
16	7-7/8	OWS	87160	5600	91	10½
	7-7/8			5650	50	
17	7-7/8	OWS	88136	5765	115	18
	7-7/8	DC		5797	32	

* The above information was obtained from Hughes Tool Company

E. P. U. WELL NO. 11

CHRISTENSEN DIAMOND CORE BIT RECORD

Core No.	Bit No.	Size	From	To	Ft. Cut	Time-Min.	Avg. Min. per Foot
1	F-1869	7-7/8	5465	5489	24	431	17.96
2	F-1869	7-7/8	5490	5510	20	254	12.70
3	F-1869	7-7/8	5600	5650	50	361	7.22
4	F-1869	7-7/8	5765	5780	15	280	18.67
	Average Core Time for E. P. U. Well No. 11 per foot						14.14

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger	
Electrical Survey	63'-5797'
Detail	4860'-5797'
Microlog	5400'-5792'
Lane-Wells	
Neutron-Gamma Ray	0'-5797'.

LOG TOPS

	Depth	Datum	Thickness
Judith River	757	+1328	
Eagle	1139	+ 946	
Niobrara	1992	+ 93	
Carlile	2142	- 57	
Greenhorn	2343	- 258	
Graneros	2541	- 456	
Upper Muddy	2694	- 609	
Muddy	2912	- 827	
Skull Crk.	2953	- 868	
Dakota Silt	3123	-1038	
Morrison	3530	-1445	
Swift	3918	-1833	
Rierdon	4094	-2009	
Piper Shale	4260	-2175	
Piper Ls.	4348	-2263	
Gypsum Sprgs.	4402	-2317	
Spearfish	4602	-2517	
Amsden	4731	-2646	
Heath	4988	-2903	
Kibbey	5123	-3038	
Kibbey Ls.	5287	-3202	
Madison	5385	-3300	
A-1	5464	-3379	2'
A-2	5474	-3389	4'
A-3	5491	-3406	5'
A-4	5500	-3415	25'
B-1	5620	-3535	9'
B-2	5638	-3553	14'
B-3	5660	-3575	6'
B-4	5694	-3609	6'
B-5	5733	-3648	?
C-1	5776	-3691	?
C-2	----	-----	----

CORE DESCRIPTIONS

Core No. 1

5465-5489 Rec. 21'

C. T. 25, 16, 21, 10, 3, 3, 6, 11, 11, 13, 12, 16, 16, 17, 15, 20, 28, 22, 25, 20, 12, 17, 11, 80.

3'6" Limestone; dark grayish brown, amorphous with few very thin streaks of fine crystalline, dense to very slight porosity, slight oil odor on fresh break.

1'6" Dolomite; light gray, earthy, very slight porosity, looks wet. No show.

2'6" Anhydrite and dolomite; thinly interbedded anhydrite, white, dense; dolomite light gray, earthy, very slight porosity, looks wet. No show.

5' Dolomite, gray, amorphous, hard, dense. No show.

1' Dolomite; gray, earthy, very slight porosity, looks wet, crumbly. No show.

2' Limestone; gray, amorphous, hard, dense, slightly anhydritic, very slight odor on fresh break.

5'6" Anhydrite; very light gray, microcrystalline, dense. No show.

Core No. 2

5489-5509 Rec. 20'

18'6" Limestone; brownish-gray, amorphous, dense, except for few short tight fractures scattered throughout unit, oil bleeding from fractures.

1'6" Limestone; dark brown, fine crystalline to pseudo-oolitic, porous and permeable, good sulphurous oil odor, weak spotted yellow fluorescence.

Core No. 3

5600-5650 Rec. 50'

C. T. 8, 8, 10, 11, 22, 10, 5, 7, 8, 6, 7, 6, 8, 9, 9, 7, 6, 3, 4, 6, 5, 2, 2, 2, 5, 6, 10, 9, 9, 7, 10, 8, 8, 8, 7, 4, 2, 4, 5, 9, 9, 8, 7, 7, 5, 7, 7, 3, 11, 15

4' Dolomite; anhydritic, medium greenish-gray, amorphous, hard and dense. No show.

Core No. 3, Cont'd.

6' Anhydrite; white to very light gray; shot through with salt veinlets and inclusions, vuggy, due to solution of salt, otherwise dense. No show.

6' Anhydrite; light brownish-gray, amorphous, fairly soft and dense. No show.

8' Limestone; grayish-brown, earthy to fair crystalline, slightly porous and permeable, good oil odor, fair oil taste, numerous dark brown, accicular vesicular crystals near base.

9' Anhydrite; light brownish-gray, amorphous, dense. No show.

17' Limestone; grayish-brown, earthy to amorphous, becoming fine crystalline in streaks. Slightly porous and permeable for most part, becoming dense in spots and streaks, slightly vugular throughout; good oil odor and taste; occasional spots bleeding oil.

NOTE: Both B-1 and B-2 compare favorably with sections in other wells.

Core No. 4

5765-5797 Rec. 26'

C. T. 25, 20, 20, 13, 13, 15, 15, 29, 27, 25, 32, 22, 9, 7, 8, 8, 8, 8, 5, 4, 5, 4, 5, 4, 5, 5, 4, 4

1'6" Limestone; medium gray, very fine crystalline, very hard, dense, no show.

2'0" Limestone; dark gray to black, dense, amorphous to microcrystalline, medium hard, very argillaceous, occasional very thin, tight, hairline vertical fracture; numerous very thin, black shale partings; numerous small elongated crystals of calcite. No show.

2'6" Dolomite; dark gray to black, amorphous, with occasional thin streak of light gray, earthy dolomite, very hard, dense, except for thin streaks of earthy dolomite which look wet, and are very slightly porous. No show.

1'6" Limestone; dark gray-black, very fine crystalline, very argillaceous with numerous very thin black shale partings, medium hard, dense, shale cleavage. No show.

1'6" Dolomite; dark gray, amorphous, very hard, dense, slightly calcareous. No show.

4'0" Limestone; dark brownish-gray, fine to medium crystalline, medium hard, dense, except for single 3" streak of limestone at 5778, which has fair porosity and questionable permeability, with faint oil odor and dull yellow fluorescence; otherwise, no show.

Core No. 4, Cont'd.

1'0" Dolomite; light gray, fine crystalline, very hard; occasional short, very tight, hairline vertical fracture; dense. No show.

3'0" Limestone; medium gray, fine to medium crystalline, very hard, dense; faint oil odor on fresh break; otherwise no show.

9'0" Limestone; brownish-gray, fine to medium crystalline, hard, fair intercrystalline porosity in top, becoming good toward base; single very thin, tight, recemented vertical fracture in top 5', with several fairly well-developed, tight, recemented vertical fractures in bottom 4'; fair oil odor and stain in mass of core; fair dull, yellow fluorescence; all fractures tight and recemented with clear calcite.

Analysis run on bottom 13'.

DRILL STEM TESTS

DST #1, 5489-5509 — Tool open 2 hours, 40 minutes, closed 15 minutes. ½" bottom choke, no water cushion. Tool opened with good blow, diminished to weak steady blow at end of test. Recovered 182' mud cut with salt water, gas and trace of oil, 728' salt water with a trace of oil and gas, 1223' salt water, slightly gas cut. IBHFP 0 FBHFP 1000# BHSIP 2850# Hydro 3050#

DST #2, 5484-5502 — ½" bottom choke, no water cushion. Tool open 4 hours closed 20 minutes. Opened with very weak blow and diminished to good bubble at end of test. Recovered 182' mud cut with salt water, gas and trace oil, 297' salt water. (Bottom packer held O.K.) IBHFP 0 FBHFP 200 BHSIP 2800# Hydro 3027#

DST #3, 5786-5797 — Driller depth. ½" bottom choke, no water cushion. opened tool at 4:40 a.m. for 4 hours; closed 20 min. Tool opened with weak blow, which remained same throughout test. Recovered: gas 5220' from top and 31' mud slightly gas cut and with trace oil. No pressures recorded.

DST #4, 5621-5629 — Johnston tool, straddle packers, set at 5614 and 5634, 3/8" bottom choke, no water cushion; tool open with weak blow; fluid to surface in 310 minutes. Flowed light heads of oil-and-gas-cut mud; flow died after 7 hours. Tool closed after 8 hours. Shut in 15 min. Recovered 1288' oil & gas cut mud, 1104' muddy salt water, 3224', clear salt water. Chl. 78,000 ppm IBHFP 700# FBHFP 2700# BHSIP 2700# Hydro 3250#

DST #4, 5621-5629 — Re-run with Halliburton tool, straddle packers at 5608 and 5633. Tool open with good blow. Gas to surface in 90 minutes. Fluid to surface in 155 minutes. Flow: oil with 4% mud and 15% salt water in heads. Flowing approximately 80% oil, 5% mud and 15% salt water in heads.

DST #5, 5638-5646 — Testing "B-2" Zone. Reset packers. Packers set at 5633 and 5658. Tool open with weak blow. Fluid to surface in four hours. Flowed oil weakly by heads. No estimate on amount.

EAST POPLAR UNIT WELL NO. 11

Completion Summary

October 22, 1952: Ran 5771.50' 5½" 15.50#, J-55, 8 rd. thd. R-2 German casing. Landed 11.50' below RKB, with Baker float collar at 5755.14', Baker float shoe at 5783', 3 Baker centralizers at 5694', 5666' and 5764', HOWCO scratchers at 5608 to 5618, 5628 to 5633, 5647 to 5662, 5775 to 5769, 5768 to 5778. Cemented with 200 sacks Dakota bulk cement and 4 sacks gel. Pipe rotated freely throughout cementing operations. Bumped plug with 1000#. Released pressure; held okay. Plug down at 8:30 a.m., 10-22-52.

October 24, 1952: 5797 feet. Tested 5½" casing with 1000# for 30 minutes; held okay. Started picking up 2-3/8" tubing.

October 25, 1952: Drilled out plug and float collar at 5754' and shoe at 5783' (Open hole 5783' to 5797'). Ran gamma ray-neutron and collar log. Shot "C" zone with open hole jet gun from 5788 to 5796, 2shots per foot. Perforated B-1 zone 5621 to 5629, and B-2 zone, 5638 to 5646, 4 jet shots per foot. Set Baker Model #D packer at 5769 on W.L.

October 26, 1952: Ran 185 joints (5756.13') 2-3/8", 4.70#, J-55, E.U.E. 8 rd. thd. R-2 American tubing with Otis choke and Baker flush joint seal nipples act. spaced as following:

Landed below RKB	10.60'
185 joints tubing	5756.13'
Otis choke nipple	1.36'
Baker finder sub	.91'
Top Baker Model "D" Packer	5769.00'
2 Baker seal nipples	1.70'
Baker flush joint blank	13.78'
Perforated nipple	3.50'
1 Baker seal nipple	.85'
1 pc. Baker flush joint plugged	5.04'
Bottom tubing	5788.83'

Displaced mud with water. Acidized B-1, 5621-5629, and B-2, 5638-5645, with 1000 gallons 15% regular acid. Maximum pressure 2503; minimum pressure 2500. Acidized C Zone with 1000 gallons 15% regular acid. Maximum pressure 2500; minimum pressure 1400. Cleaning in pit.

October 27, 1952: Flowing to pit "B" Zones making approximately 100 barrels fluid per day, 18% water. "C" Zone dead.

October 28, 1952: Preparing to kill well and make trip with tubing to change seal rings (note: found Otis choke nipple washed out) to reacidize "C" Zone. Tested "B" zones 7 hours, flowed 20 barrels fluid, 1.5% water. Reversed out 5000' clean oil, 768' water.

October 29, 1952: Reacidized "C" Zone with 3000 gallons. Maximum pressure 3000#; minimum pressure 2700#. Flowed 3 barrels oil per hour, 10 to 50% acid water, wash water and salt water.

COMPLETION SUMMARY

October 30, 1952: Swabbed "C" Zone at rate of 100 barrels fluid per day, 25 to 75% water. Packer failed after 8 hours. Making trip with tubing.

October 31, 1952: DST No. 4, with Johnston test tool, 5621 to 5629, with straddle Hookwall packers set at 5614-5624; 3/8" bottom choke, no water cushion. Tool open at 5:00 a.m. with weak blow, fluid to surface in 310 minutes (10:40 a.m.). Flowed light heads of oil-and-gas-cut mud; 12 o'clock noon, well dead. Closed tool at 1:00 p.m.; shut in 15 minutes. Recovered 1288' oil-and-gas-cut mud, 1104' muddy salt water, 3224' white salt water. Chl. 78,000 ppm. IBHFP 700# FBHFP 2700# BHSIP 2700# Hydro 3250#. Lost mud while resetting packer; bottom packer did not hold. Preparing to retest.

November 1, 1952: Reran DST No. 4 (two attempts) with Johnston. Top packer failed both runs, after 3 minutes could not determine recovery. Preparing to retest.

November 2, 1952: Reran DST No. 4 with Halliburton, 5621 to 5629, with straddle hookwall packers set at 5608-5633; 5/8" bottom choke, no water cushion. Tool open at 11:10 p.m. with good blow gas to surface in 90 min. Fluid to surface in 155 minutes. Flowed 4% mud, 15% water at rate of 2 barrels per hour. Swabbed well 5 hours, approximately 6 barrels fluid per hour, 50% water.

November 3, 1952: Reset packers to test B-2 Zone, 5638-5646; straddle hookwall packers set at 5633-5656. Open tool at 5:00 p.m. with weak blow. Fluid to surface in 4 hours. Flowed oil weakly by heads, unestimated amount. Swabbed well 8 hours at rate of 3 barrels per hour, 50 to 60% water. Start of swabbing 40% at end of 8 hours swabbing.

November 4, 1952: Pulled test tool. Recovered 2416' clean oil, 184' water. Ran tubing with Baker seal nipples flush joint and Otis choke nipple separation choke left out (note: both "B" and "C" zones together through Otis choke nipple). Displaced mud with water, water with oil to complete.

November 5, 1952: Open flow 7 hours, at rate of 1.30 barrels per hour. Flowed around down casing out tubing with Well No. 8 to get water off bottom No. 11. Swabbed 17 barrels water, 9 barrels oil.

November 6, 1952: Swabbed down to 1200' at 5:00 p.m. Shut down for darkness. Started flowing at 9:30 p.m. to 6:30 a.m.; flowed 9 barrels fluid, 5% water. For 1½ hours (7:00 a.m. to 8:30 a.m.) swabbed 6 barrels fluid, 3% water. No pressure on casing.

November 7, 1952: Swabbed into test tank, 40 barrels oil, 30 barrels water in 7½ hours. Fluid level remained at 1500' from top. Flowed 10 barrels fluid in 15 hours, 1% BS&W. Released rig at 5:00 p.m., 11-7-52.

November 8, 1952: Shut in. Moving off rig. TSIP: 150# CSIP: 675#

November 9, 1952: Shut in.

November 10, 1952: Flowed 9 barrels oil, 7 barrels water in 17 hours. CP: 575#, TP: 0 Flowing by heads.

COMPLETION SUMMARY

November 11, 1952: Open flow for 22 hours, flowed 27 barrels oil, 10 barrels water. CP 250# TFP 0

November 12, 1952: Tested 24 hours, flowed 30 barrels oil, 11 barrels water. Waiting for swabbing unit. CP 200# TFP 0

November 13, 1952: Open flow 24 hours, flowed 18 barrels oil, 3 barrels water. Rigging up to swab.

November 14, 1952: Open flow 16 hours, flowed 21 barrels oil, 6 barrels water.

November 15 to 16, 1952: Waiting on swab truck.

November 17, 1952: Swabbed 8 hours, 20 barrels fluid, per hour, 3% water; 155 barrels oil, 5 barrels water.

November 18, 1952: Swabbed 37 barrels oil, 13 barrels water, last 3 hours of 8 hours swabbing.

November 20, 1952: Flowed 16 barrels oil in 17 hours.

November 21, 1952: Open flow 12 barrels oil, 24 hours.

November 22, 1952: In 24 hours, flowed 27 barrels oil, 2 barrels water.

November 23, 1952: Swabbed 124 barrels oil, 14 barrels water in 5 hours. Fluid level lowered to 2600'. Flowed 5 barrels oil, 1 barrel water in 3 hours. To drop from report.

January 9, 1953: TEST: Open flow, 17% BS&W, 55.10 barrels oil, 10.58 barrels water.

March 3, 1953: TEST: 24 hours, pump 16 x 64"; 18% BS&W, 122.80 barrels oil, 26.96 barrels water.

Production Tests

"B" and "C" Zones

11-6-52	Flowed 7 hours at 1.30 barrels per hour, 65% salt water
11-7-52	Flowed and swabbed 15 barrels in 6 hours, 3 to 5% salt water
11-8-52	Swabbed 70 barrels, 42% salt water in 7½ hours. Flowed 10 barrels in 15 hours, 1% BS&W
11-9-52	Shut in. TP 150#, CP 675#
11-10-52	CP 700#, TP 75#. Flowed 10 barrels oil in 18 hours on 10/64" choke.
11-11-52	CP 575#, TP 0#. Flowed 9 barrels oil, 7 barrels salt water in 17 hours by heads. Open flow.

"B" and "C" Zones
Production Test Data
Cont'd.

11-12-52	CP 250#, TP 0# Flowed 27 barrels oil, 10 barrels salt water in 22 hours. Open flow
11-13-52	CP 200#, TP 0# Produced 30 barrels oil, 11 barrels salt water in 24 hours
11-14-52	Open tubing flowed 18 barrels oil and 3 barrels salt water in 24 hours
11-15-52	Open tubing flowed 21 barrels oil and 6 barrels salt water in 16 hours
11-18-52	Swabbed 20 barrels oil per hour, 3% salt water
1-14-53	Flowed 43.34 barrels oil 46% salt water through 3/4" choke, TP 100#

Conclusions: Production from "B" zones could be increased by an additional shot of acid. The "C" zone might be improved by Stratafrac.

SAMPLE DESCRIPTION

0-2380	No samples.
2380-2520	Shale; medium gray, micaceous, calcareous; some bentonite
2520-2680	Shale; light gray, micaceous
2680	Sample Top: Upper Muddy
2680-2910	Shale; light gray, micaceous; silt; light gray, calcareous.
2910	Sample top: Muddy
2910-2950	Sandstone; light gray, fine-grained, porous, speckled; some gray shale.
2950	Sample top: Skull Creek
2950-3190	Shale; medium gray, micaceous; trace of fine grained sand.
3190	Sample top: Dakota Silt
3190-3240	Shale; medium gray, micaceous; sandstone; medium gray, salt and pepper.
3240-3325	Shale; light and medium gray.
3325-3490	Sand; medium gray, porous; some gray shale.
3490-3570	Shale; medium to dark gray, some calcareous and silty. Sandstone, white, porous.
3570	Sample top: Morrison
3570-3680	Shale; medium gray, slightly calcareous; sandstone, white, glauconitic; some bentonite and pyrite.
3680-3920	Shale; gray, calcareous, some bentonite.
3920	Sample top: Swift
3920-4010	Sandstone; light gray, very fine grained, calcareous; some light and dark gray splintery and fissile shale.
4010-4090	Shale; dark gray, splintery
4090	Sample top: Rierdon

SAMPLE DESCRIPTION

4090-4260	Shale; light greenish-gray, splintery, calcareous in upper half.
4260	Sample top: Piper Shale
4260-4330	Shale; red, some gray splintery shale.
4330	Sample top: Piper Limestone
4330-4390	Limestone; dark brown, dense, micaceous; some gray shale.
4390	Sample top: Gypsum Springs
4390-4440	Shale; light greenish-gray, fissile; trace of green shale; sandstone; white, medium grain, angular, porous, in lower 10 feet.
4440-4550	Limestone; light grayish-brown, amorphous to fine crystalline; shale; dark gray, some red in upper fifty feet.
4550	Sample top: Spearfish
4550-4725	Sandstone; red, very fine grained, calcareous, tight, some white anhydrite in all but lower 35 feet
4725	Sample top: Amsden
4725-4810	Limestone; gray, fine crystalline; sandstone, red, fine-grained, calcareous; some gray shale.
4810	Sample top: Heath
4810-5000	Limestone; light gray brown, shale; red gray, and green; the latter only in central 70 feet; sand, red in upper 80 feet, white in lower, fine grained, loosely cemented; trace of anhydrite in lower 30 feet.
5000	Sample top: Otter
5000-5050	Limestone; light brownish-gray, fine crystalline; shale, green, red, and gray; sandstone; gray, well rounded; traces of anhydrite.
5050-5120	Limestone; light brownish-gray; sandstone, red and white, glauconitic, calcareous, gray calcareous shale; red and green shale, some bentonite
5120	Sample top: Kibbey
5120-5270	Sand; red, fine grained, poorly sorted, calcareous; some gray crystalline limestone, gray calcareous shale and red and green shale. No samples, 5220-5240
5270	Sample top: Kibbey limestone
5270-5400	Limestone; light brown, fine crystalline; sandstone, red, fine grained; some red and green shale, some gray calcareous

SAMPLE DESCRIPTION

5270-5400 Cont'd.	shale; traces of white anhydrite, some bentonite in central 50 feet.
5400	Sample top: Charles
5400-5450	Anhydrite; white, fine crystalline, soft; sandstone, red very fine grained, calcareous; limestone, gray, fine crystalline, medium hard, oolitic in lower 40 feet; some red and green shale, and gray calcareous shale.
5450-5465	No report on samples.
5465-5489	Core No. 1
5489-5509	Core No. 2
5509-5590	Limestone; brownish-gray, microcrystalline; anhydrite, gray to white, fine crystalline, in lower 30 feet; some red, green and gray shale; traces of light gray dolomite.
5590-5600	No report on samples.
5600-5650	Core No. 3
5650-5760	Anhydrite; grayish-white, fine crystalline; limestone, grayish-brown, fine crystalline; some light gray dolomite.
5760-5769	No report on samples.
5769-5797	Core No. 4
	T.D. Driller = 5797 Schl. = 5798

Location: C NE NW Sec 10-[illegible]
Spacing: 1/1 acres
Elevation: 2085 K.B. 2073 Gr.
Spudded: 2-28-52
Completed: 11-7-52
T.D.: 5798' Schl.
Prod. Zones: B-1 5621-29'; B-2 5638-46'
C-2 open hole 5788-96'

Schlumberger Tops

	Depth	Datum	Thickness
Judith River	----	-----	
Greenhorn	2343	- 258	
Muddy Sd	2912	- 827	
Dakota Silt	3123	-1038	
Piper Ls	4348	-2263	
Amsden	4731	-2646	
Heath	4829	-2744	
Otter	4988	-2903	
Kibbey Sd	5123	-3038	
Kibbey Ls	5287	-3202	
Madison	5385	-3300	
A-1	**5464	-3379	2'
A-2	**5474	-3389	4'
A-3	5491	-3406	5'
A-4	5500	-3415	25'
B-1	5620	-3535	9'
B-2	5638	-3553	14'
B-3	**5660	-3575	6'
B-4	**5694	-3609	6'
B-5	5733	-3648	?
C-1	5776	-3691	?
C-2	----	----	

**Probable prod. Zones (From DST structural position, etc.
*Shows

Drill Pipe Corrections (Made)
No SLM recorded

Coring Intervals:
#1 5462-5489 Rec. 21' A-1 & 2
#2 5489-5509 Rec. 20' A-3 & 4
#3 5600-5650 Rec. 50' B-1 & 2
#4 5765-5797 Rec. 24' C-1

Drill Stem Tests:

DST #1 5489-5509 A-3 & 4. Op 2 hrs, 40 min., SI 15 min. Rec. 182' mud cut w/s.w. & gas w/tr. oil, 728' s.w. w/tr o & g. 1223' s.w. sl gas cut. IBHFP 0 FBHFP 1000#, BHSIP 2850#, Hydro 3050#.

DST #2 5484-5502 A-3 & 4. Op 4 hrs, SI 20 min. Rec. 182' s.w. cut w/tr oil, 297' s.w. IBHFP 0 FBHFP 200 BHSIP 2800 Hydro 3025#.

DST #3 5786-5797 C-1. Op 4 hrs, SI 20 min. Rec. 31' gas cut mud w/tr oil. Press bomb failed.

DST #4 5621-29, B-1. Op 8 hrs, SI 15 min. Rec. 1288' oil & gas cut mud, 1104' muddy salt wtr, 3224' clr salt wtr (78,000 ppm) IBHFP 700#, FBHFP 2700#, BHSIP 2700#, Hydro 3250#.

DST #4 re-run 5621-29 B-1, flwg approx 80% oil, 5% mud, 15% s.w. in heads. Swabbed 6 bph, 50% s.w. B-1 zone.

DST #5 5638-5646 B-2, swabbed 8 hrs at 3 bph, 40-60% s.w. Rec. 2416' cln oil, 104' wtr.

History Subsequent to completion:

None

Epu # 11
S + T

16 pages

EAST POPLAR UNIT WELL NO. 11

WORKOVER

April 26, 1953:

Total Depth: 5797 feet

Set Otis side door choke nipple at 5766.73' shutting off "C" Zone (5783' to 5797' open hole). Pumped 40 barrels of oil in casing to displace water off the bottom out through the Tubing (7 barrels water).

April 28, 1953:

Stratafrac-ed the B-1, 5621' to 5629', and the B-2, 5638' to 5646', with 1000 gallons gel acid followed with 2000 gallons Dowell, regular, 15% acid and 1000 gallons crude oil. Displaced first 6 barrels of gel acid at 3100 lbs; pressure broke back to 2900 lbs. Displaced 66 barrels gel acid and 15% regular acid at 2 barrels per minute with 3000 lbs. Displaced 24 barrels crude oil into formation at 8/10 barrel per minute with 3100 lbs. Flowed 24 barrels oil from tubing and approximately 24 barrels oil that was pumped into formation in 120 minutes; died to light heads, 60% acid water. Estimated flow into pit, 80 barrels fluid per day.

April 29, 1953:

Set test tank at well. In 17 hours, well flowed 46.22 barrels oil and 18.16 barrels water. TSIP: 250 lbs. CSIP: 625 lbs.

April 30, 1953:

In 20 hours, well flowed 53.77 barrels oil and 26.48 barrels water. TFP: 0 lbs. CP: 375 lbs. To drop from reports.

WORKOVER HISTORY NO. 2

May 26, 1959

Lease and Well Number: East Poplar Unit Well No. 11

Field: East Poplar County: Roosevelt State: Montana

Well Location: C NE NW Section 10, T28N, R51E

Status Prior to Present Job:

Completed: November 7, 1952 Date of Last Workover: April 30, 1953

T.D.: 5797' Producing Zones: "B1, 2 and C-3" Zones of Madison Formation

Perforations: 5621'-5629', 5638'-5646' and 5783'-5797' Cumulative Production through April, 1959: 301,650 BO and 90,865 BW.

Justification for Workover: to repair leak in casing.

Summary of Workover:

5-4-59 T.D. 5797' -- Pulled rods and tubing. Ran tubing with Halliburton full bore packer to check 5-1/2" casing. Indicated leak between 3774' and 4386'.

5-5-59 T.D. 5797' -- Located leak in 5-1/2" casing at 3788' and pumped into same at the rate of 1/2 BPM at 1000#. Made trip with tubing to pick up Halliburton retreivable bridge plug and full bore packer. Set bridge plug at 3860', tested same with 3000#, would not hold. Moved bridge plug and retested, would not hold.

5-6-59 T.D. 5797' -- Tested Halliburton bridge plug with 3000#, held ok. Set packer above leak and tested casing and BOP with 2000#, would not hold. Closed tubing testing sub and tested tubing with 3000#, would not hold. Found 2 collars leaks.

5-7-59 T.D. 5797' -- Ran 2-7/8" tubing with Halliburton retreivable bridge plug, full bore packer and tubing testing sub. Tested tubing, would not hold. Pulled tubing, then shut down for 2". string of used tubing.

5-8-59 T.D. 5797' -- Picked up 3800' of 2-3/8" tubing, Halliburton bridge plug, full bore packer and tubing testing sub. Tested tubing with 3000#, held. Set retreivable bridge plug at 3856'. Tested bridge plug with 3000#, held ok. Spotted gel on top of bridge plug. Squeezed leak at 3788' with 50 sacks regular cement, HR-4 retarder added. Broke formation with 1000#. Squeezed 50 sacks out in formation, maximum pressure 2200#. Cleared tool with 5 barrels water, let set overnight (12 hours).

Summary of Workover continued

5-9-59 T.D. 5797' -- Attempted to go down and test bridge plug. Found cement bridge in casing at 3800'. Set packer above bridge and pressured up to 3000#. Bleed off slow, then communicated to casing. Knocked bridge out of casing and retested bridge plug with 3000#, held ok. Located second hole in 5-1/2" casing at 3802'. Moved bridge plug down hole to 3910', tested, held ok. Spotted gel on top of bridge plug. Squeeze #2 -- with 75 sacks Slo-set cement. Broke formation with 1800#. Squeezed 75 sacks out in formation, maximum pressure 1800#, would not hold. Cleared tool and let set 4 hours. Tested bridge plug with 3000#, held ok. Squeeze #3 -- with 75 sacks Slo-set cement. Broke formation with 1600#. Squeezed 75 sacks out in formation, maximum squeeze pressure 1800#, would not hold. Reversed through leak at 3788'. Leak at 3802', squeezed hard cement. Could not wash through, let set 3 hours. Squeeze #4 -- with 50 sacks Slo-set cement. Broke formation with 2000#. Squeezed 40 sacks out in formation. Left 5½ sacks cement in pipe. Maximum squeeze pressure 3200#, would not hold. Build to 2700#, held ok. Reversed out 5 sacks cement, holding 1500# pressure on formation. Pressured up to 2000#, let set overnight.

5-10-59 T.D. 5797' -- Tested squeeze with 2500#, held ok. Made trip with tubing to remove full bore packer and pick up 4-3/4" bit.

5-11-59 T.D. 5797' -- Rigged up power swivel and drilled 70' of cement. Circulated 1 hour, 30 minutes. Tested squeeze with 1500# for 15 minutes, held ok. Came out of hole, laying down 2-3/8" tubing. Shut down due to high wind.

5-12-59 T.D. 5797' -- Layed down 2-3/8" tubing. Went in hole with 2-7/8" tubing. Fished retreivable bridge plug, started out of hole. Shut down due to high winds.

5-13-59 T.D. 5797' -- Recovered bridge plug. Ran 2-1/2" tubing and rods with 2-1/2" x 2" x 16' Insert pump. Started pumping.

5-14-59 T.D. 5797' -- Pumping 100% water, will test today.

5-15-59 T.D. 5797' -- On 4 hour test, pumped at the rate of 71 BFPD, 100% water.

5-16-59 T.D. 5797' -- On 24 hour test, pumped at the rate of 78 BFPD, 100% water, Chlorides 90,000 PPM.

5-17-59 T.D. 5797' -- Ran tubing, open ended with 29', 2" tail pipe. Washed mud, sand and shale from below packer to solid bottom, lowered seating nipple to bottom to relieve Hydro to attempt to break formation block.

5-18-59 T.D. 5797' -- Ran rods and 2-1/2" x 1-1/2" x 16' Oil Well pump.

5-19-59 T.D. 5797' -- No test due to power failure. Water cut 100%, Chlorides 61,000 PPM.

5-20-59 T.D. 5797' -- On 4 hour test, pumped at the rate of 170 BFPD, 72% water (48 BOPD, 122 BWPD), Chlorides 91,000 PPM.

Summary of Workover continued

5-21-59 T.D. 5797' — On 24 hour test, pumped at the rate of 156 BFPD, 60% water (63 BOPD, 94 BWPD), Chlorides 90,000 PPM.

5-22-59 T.D. 5797' — On 20 hour test, pumped at the rate of 157 BFPD, 54% water (72 BOPD, 85 BWPD).

5-23-59 T.D. 5797' — On 20 hour test, pumped at the rate of 161 BFPD, 53% water (76 BOPD, 85 BWPD). This is the workover potential test, to drop from report.

Recap of Workover:

1. Final Perforations: 5621'-5629', 5638'-5646' and 5783'-5797' (unchanged)

2. Total Depth: 5797'

3. Workover Potential: Pumping 161 BFPD, 53% water (76 BOPD, 85 BWPD)

4. Geologic Name of Producing Zones: "B1,2 & ~~C-3~~" Zones of Madison Formation

Results of Workover: casing leak repaired, Workover Successful.

Downhole Equipment:

Tubing Record: 190 jts. of 2-7/8", 6.50#, J-55, 8rd. thd., R-2, Class 2, American tubing

Below RKB	9.00'
Top joint 2-7/8"	29.80'
3 — 2-7/8" tubing subs	20.42'
189 jts. 2-7/8" tubing	5693.29'
Seating Nipple	1.35'
	5753.86'
Tail pipe & swedge	30.10'
Bottom of tubing	5783.96'

Rod Record:

40 - 7/8" Scraper Rods	1000'
20 - 7/8" Plain Rods	500'
76 - 3/4" Plain Rods	1900'
92 - 5/8" Plain Rods	2300'
12' 7/8" Subs	12'
	5712

Pump Record: 2-1/2" x 1-1/2" x 16' Oil Well Pump

WORKOVER HISTORY NO. 2

May 26, 1959

Lease and Well Number: East Poplar Unit Well No. 11

Field: East Poplar County: Roosevelt State: Montana

Well Location: C NE NW Section 10, T28N, R51E

Status Prior to Present Job:

Completed: November 7, 1952 Date of Last Workover: April 30, 1953

T.D.: 5797' Producing Zones: B and C Zones of Madison Formation

Perforations: 5621'-5629', 5638'-5646' and 5783'-5797' Cumulative Production through April, 1959: 301,650 BO and 90,865 BW.

Justification for Workover: to repair leak in casing.

Summary of Workover:

5-4-59 T.D. 5797' -- Pulled rods and tubing. Ran tubing with Halliburton full bore packer to check 5-1/2" casing. Indicated leak between 3774' and 4386'.

5-5-59 T.D. 5797' -- Located leak in 5-1/2" casing at 3788' and pumped into same at the rate of 1/2 BPM at 1000#. Made trip with tubing to pick up Halliburton retreivable bridge plug and full bore packer. Set bridge plug at 3860', tested same with 3000#, would not hold. Moved bridge plug and retested, would not hold.

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5-7-59 T.D. 5797' -- Ran 2-7/8" tubing with Halliburton retreivable bridge plug, full bore packer and tubing testing sub. Tested tubing, would not hold. Pulled tubing, then shut down for 2" string of used tubing.

5-8-59 T.D. 5797' -- Picked up 3800' of 2-3/8" tubing, Halliburton bridge plug, full bore packer and tubing testing sub. Tested tubing with 3000#, held. Set retreivable bridge plug at 3856'. Tested bridge plug with 3000#, held ok. Spotted gel on top of bridge plug. Squeezed leak at 3788' with 50 sacks regular cement, HR-4 retarder added. Broke formation with 1000#. Squeezed 50 sacks out in formation, maximum pressure 2200#. Cleared tool with 5 barrels water, let set overnight (12 hours).

Summary of Workover continued

5-9-59 T.D. 5797' -- Attempted to go down and test bridge plug. Found cement bridge in casing at 3800'. Set packer above bridge and pressured up to 3000#. Bleed off slow, then communicated to casing. Knocked bridge out of casing and retested bridge plug with 3000#, held ok. Located second hole in 5-1/2" casing at 3802'. Moved bridge plug down hole to 3910', tested, held ok. Spotted gel on top of bridge plug. Squeeze #2 -- with 75 sacks Slo-set cement. Broke formation with 1800#. Squeezed 75 sacks out in formation, maximum pressure 1800#, would not hold. Cleared tool and let set 4 hours. Tested bridge plug with 3000#, held ok. Squeeze #3 -- with 75 sacks Slo-set cement. Broke formation with 1600#. Squeezed 75 sacks out in formation, maximum squeeze pressure 1800#, would not hold. Reversed through leak at 3788'. Leak at 3802', squeezed hard cement. Could not wash through, let set 3 hours. Squeeze #4 -- with 50 sacks Slo-set cement. Broke formation with 2000#. Squeezed 40 sacks out in formation. Left 5⅘ sacks cement in pipe. Maximum squeeze pressure 3200#, would not hold. Build to 2700#, held ok. Reversed out 5 sacks cement, holding 1500# pressure on formation. Pressured up to 2000#, let set overnight.

5-10-59 T.D. 5797' -- Tested squeeze with 2500#, held ok. Made trip with tubing to remove full bore packer and pick up 4-3/4" bit.

5-11-59 T.D. 5797' -- Rigged up power swivel and drilled 70' of cement. Circulated 1 hour, 30 minutes. Tested squeeze with 1500# for 15 minutes, held ok. Came out of hole, laying down 2-3/8" tubing. Shut down due to high wind.

5-12-59 T.D. 5797' -- Layed down 2-3/8" tubing. Went in hole with 2-7/8" tubing. Fished retreivable bridge plug, started out of hole. Shut down due to high winds.

5-13-59 T.D. 5797' -- Recovered bridge plug. Ran 2-1/2" tubing and rods with 2-1/2" x 2" x 16' Insert pump. Started pumping.

5-14-59 T.D. 5797' -- Pumping 100% water, will test today.

5-15-59 T.D. 5797' -- On 4 hour test, pumped at the rate of 71 BFPD, 100% water.

5-16-59 T.D. 5797' -- On 24 hour test, pumped at the rate of 78 BFPD, 100% water, Chlorides 90,000 PPM.

5-17-59 T.D. 5797' -- Ran tubing, open ended with 29', 2" tail pipe. Washed mud, sand and shale from below packer to solid bottom, lowered seating nipple to bottom to relieve Hydro to attempt to break formation block.

5-18-59 T.D. 5797' -- Ran rods and 2-1/2" x 1-1/2" x 16' Oil Well pump.

5-19-59 T.D. 5797' -- No test due to power failure. Water cut 100%, Chlorides 61,000 PPM.

5-20-59 T.D. 5797' -- On 4 hour test, pumped at the rate of 170 BFPD, 72% water (48 BOPD, 122 BWPD), Chlorides 91,000 PPM.

Summary of Workover continued

5-21-59 T.D. 5797' -- On 24 hour test, pumped at the rate of 156 BFPD, 60% water (63 BOPD, 94 BWPD), Chlorides 90,000 PPM.

5-22-59 T.D. 5797' -- On 20 hour test, pumped at the rate of 157 BFPD, 54% water (72 BOPD, 85 BWPD).

5-23-59 T.D. 5797' -- On 20 hour test, pumped at the rate of 161 BFPD, 53% water (76 BOPD, 85 BWPD). This is the workover potential test, to drop from report.

Recap of Workover:

1. Final Perforations: 5621'-5629', 5638'-5646' and 5783'-5797' (unchanged)

2. Total Depth: 5797'

3. Workover Potential: Pumping 161 BFPD, 53% water (76 BOPD, 85 BWPD)

4. Geologic Name of Producing Zones: B & C Zones of Madison Formation

Results of Workover: casing leak repaired, Workover Successful.

Downhole Equipment:

Tubing Record: 190 jts. of 2-7/8", 6.50#, J-55, 8rd. thd., R-2, Class 2, American tubing

Below RKB	9.00'
Top joint 2-7/8"	29.80'
3 -- 2-7/8" tubing subs	20.42'
189 jts. 2-7/8" tubing	5693.29'
Seating Nipple	1.35'
	5753.86'
Tail pipe & swedge	30.10'
Bottom of tubing	5783.96'

Rod Record:

40	7/8" Scraper Rods	1000'
20	7/8" Plain Rods	500'
76	3/4" Plain Rods	1900'
92	5/8" Plain Rods	2300'
12'	7/8" Subs	12'

Pump Record: 2-1/2" x 1-1/2" x 16' Oil Well Pump

WORKOVER HISTORY NO. 3

Lease and Well Number: East Poplar Unit No. 11

Field: East Poplar County: Roosevelt State: Montana

Well Location: C NE NW Section 10, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Completed: November 7, 1952 Date of Last Workover: May 1959

T.D.: 5797' Producing Zones: B-1, B-2 Zones of Madison

Perforations: 5621'-5629', 5638'-5646' and 5783'-5797'

Cumulative Production: 813,046 BO and 1,292,133 BW

18 BOPD 84½% WC

JUSTIFICATION FOR WORKOVER:

This well quit pumping. When the rods were pulled the pump hung up at 4050' but came loose. The tubing was stuck in the hole and had to be cut off.

SUMMARY OF WORKOVER:

9-14-92 Move in pulling unit, rig up and pull pump and rods stuck at 4275' pulled 12,000# over. Pump pulled loose, tubing stuck. Shut down.

9-15-92 Start rig and rig up Dia-Log. Run in hole to find free point. Stuck at 4055'. Cut off at 4085'. Pull 80,000# still stuck. Pull out of hole. Run in hole to 4025'. Cut off and pull tubing. Pick up drill collars and rig up tubing testers. Run in hole to 4025' with over shot. Latch on tubing and start jarring. Jarred for 4 hours. Pull tbg 4'. SDFD

9-16-92 Start rig and start jarring. Jarred for 11 hours. Jarred 2' out. Shut down and release over shot.

9-17-92 Start rig and pull tubing and tools. Run in hole with over shot and tubing to 4025' fish tubing and rig up Dia-Log run into 4084'. Cut off and rig down Dia-Log and pull 35,000# over weight, pull loose. Pulled tubing and run in hole with 4' swedge to 4052'. Start swedging. Swedge to 4082' and start pulling tubing and tools. SDFD

9-18-92 Start rig and change swedge from 4" to 4-3/8" and ran in hole to 4052' and start swedging. Swedge to 4084'. P.O.H. pick up 4-3/4" swedge. T.I.H. to 3780' swedge hung up work through. Start swedging at 4050'. Swedge until dark.

9-19-92 Continue to swedge with 4-3/4". Down to the fish 4085' at 10:30 am. Pull 5 stands and shut down.

9-21-92 Run 4-3/4" swedge down to fish and POOH lay down bumper sub and swedge. Pick up jar's and 4-3/8" overshot and run in hole. Stacked out 9' high could not reach fish. POOH. Pick up 3-7/8" overshot, run 2 jts 2-7/8" pipe between overshot and jars. Tried for 2 hours to catch fish. POOH Tools indicate we had swallowed 2' of something. SDFD

9-22-92 Run in with 4" skirted mill to 4077', stacked out. Rig up power swivel and start to mill, made 1' in 1 hour. POOH. Pick up 4-3/4" swedge. Run in and start swedging. Pound for 3 hours and getting no where. Tried to pick up and had to jar loose. Looks like shale falling in on us. Pull 5 stands and shut down.

9-24-92 Start rig and POOH brought up a piece of casing 4" x 24" long. Wrapped around swedge. Ran back in with mule shoe skirted mill (4") on bottom at 10:30 am. Rig up to circulate. Spent 1 hour getting down to where the fish should be. Milled and circulated for 5 hours, did not make any hole but brought up a lot of shale. POOH. SDFD

9-25-92 Run in with 4" mill. Start to circulate. Took 15 to 20 minutes to get from the part to the fish. Milled for 5 hours and made about 8". Never did see any iron and very little shale towards the end. POOH and rig up spear and run back in. Had trouble getting to bottom. Circulate for 30 minutes. Pulled 5 stands and shut down.

9-26-92 Finish POH with spear. Pick up skirted mill. TIH milled 5 hours and only made 1' getting a lot of shale back. POH not much wear on bottom of skirt. SD wait on orders.

9-27-92 Start rig and layed down tools and tubing and rods. Rig down move off location.

FILE E.P.U. # 1

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103 3-25 10M 1-52

DOWELL INCORPORATED

STAGE NO.

TREATMENT NO.

TREATMENT REPORT

DISTRICT Williston STATION Williston DATE 10-26, 1952

OWNER Murphy Corp. LEASE E.P. Unit WELL NO. 11
POOL East Poplar COUNTY Roosevelt STATE Montana
LOCATION OWNER'S REPRESENTATIVE Mr. James

WELL DATA

FORMATION Madison
PAY-FROM 5620 - 5637 TO 5626 - 5647
PRESENT TOTAL DEPTH 5897 P. B. FROM

PIPE DATA—
CASING SIZE 5 1/2 WT. 15.5
CASING DEPTH 5893 SKS. CEMENT 300
LINER SIZE None WT.
LINER DEPTH-FROM TO
LINER DESCRIPTION
TUBING SIZE 2" EUE DEPTH 5757
PACKER-TYPE Baker DEPTH
PACKER FURNISHED BY OPERATOR X DOWELL

COMPLETION DATA—
DATE New CABLE TOOL
ROTARY yes DRILLING FLUID mud
SIZE OPEN HOLE —

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO
4	5620	5626
4	5637	5647

PRODUCTION—

	OIL	WATER	G. O. R.
INITIAL	—	—	—
PRESENT			

ACIDIZING, SHOOTING AND LOGGING RECORD—

DETAILED RECORD OF TREATMENT

ARRIVAL AT LOCATION WITH 2000 GALS. OF DOWELL XFW Etching acid

FILL 25 BBLS.
BLEED 25 BBLS.
FLUSH 24 BBLS.

TIME A.M. OR P.M.	PRESSURE CASING	PRESSURE TUBING	BBLS. OF ACID OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	REMARKS
A							Wait for operator to circulate mud out with water
11:20							Start Dowell etching acid down tubing
11:36			24	0	24	1.4	acid in - start water flush
11:37			1 water	0	1	1.0	acid on bottom
		500					pumping slowly
		1000					pumping intermittently -
		1700					" "
		2000					" "
		2400					" "
		2150					Soaked formation - had a small break
12 Noon		2550					pressure reading
12:06		2550	9	8	8	0.28	pumping steadily
12:26		2550	16	16	8	0.3	" "
12:52			24	24	8	0.3	Flush complete - SD to flow well back.

LEFT LOCATION

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

Chg. To E.P.U. #11
Used For
AFE No. 53-17
Service Rec'd
Dist. Approval

SERVICE ENGINEER

STATION OR DISTRICT MANAGER

DISTRICT OFFICE COPY.

U. S. A.
JM 1-62

STAGE NO. ____

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT NO. ____

STRICT ____ STATION ____ DATE ____, 19__

OWNER ____ LEASE ____ WELL NO. ____
POOL ____ COUNTY ____ STATE ____
LOCATION ____ OWNER'S REPRESENTATIVE ____

WELL DATA

FORMATION ____
PAY-FROM ____ TO ____
PRESENT TOTAL DEPTH ____ P. B. FROM ____

PIPE DATA—
- CASING SIZE ____ WT. ____
- CASING DEPTH ____ SKS. CEMENT ____
- LINER SIZE ____ WT. ____
- LINER DEPTH-FROM ____ TO ____
- LINER DESCRIPTION ____
- TUBING SIZE ____ DEPTH ____
- PACKER-TYPE ____ DEPTH ____
- PACKER FURNISHED BY OPERATOR ____ DOWELL ____

COMPLETION DATA—
- DATE ____ CABLE TOOL ____
- ROTARY ____ DRILLING FLUID ____
- SIZE OPEN HOLE ____

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO

PRODUCTION—

	OIL	WATER	G. O. R.
INITIAL			
PRESENT			

ACIDIZING, SHOOTING AND LOGGING RECORD—

DETAILED RECORD OF TREATMENT

ARRIVAL AT LOCATION WITH ____ GALS. OF DOWELL

FILL ____ BBLS.
BLEED ____ BBLS.
FLUSH ____ BBLS.

TIME A.M. OR P.M. (P.M. circled)	PRESSURE CASING	PRESSURE TUBING	BBLS. OF ACID OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	REMARKS
4:30							Start Dowell & PU down Tubing
5:05			24	0	24	1.6	Acid in — Starting [illegible]
[illegible]			[illegible]	0	4	[illegible]	[illegible] 50 [illegible]
5:06							Resume acid pumping
5:06		300					Resume Water Flush
		600					
		1000					
		1500					
5:10		2000	12	12	12		Start Pump
		2550					pressure rise very abrupt
	2250	2550					pressure reaction
5:50	2200	2550	24	24	12	0.3	Flush Complete
							pressure fell back to 2000
							when flush complete

LEFT LOCATION 6:30 PM

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

J. McClure
SERVICE ENGINEER

DISTRICT OFFICE COPY.

____
STATION OR DISTRICT MANAGER

PRINTED IN U. S. A.
103 3-25 15M 10-52

FILE #11

STAGE NO.

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT NO.

DISTRICT #2 STATION Williston N.D. DATE 4-27, 1953

OWNER Murphy Corp LEASE E.P.Y. WELL NO. 11
POOL E. Poplar COUNTY Roosevelt STATE Montana
LOCATION Sec OWNER'S REPRESENTATIVE Mr. James

WELL DATA

FORMATION Charles "B" Zone
PAY-FROM ____ TO ____
PRESENT TOTAL DEPTH ____ P. B. FROM ____

PIPE DATA—
CASING SIZE 5-1/2" WT. ____
CASING DEPTH ____ SKS. CEMENT ____
LINER SIZE ____ WT. ____
LINER DEPTH-FROM ____ TO ____
LINER DESCRIPTION ____
TUBING SIZE 2" EUE DEPTH ____
PACKER-TYPE ____ DEPTH ____
PACKER FURNISHED BY OPERATOR ____ DOWELL ____

COMPLETION DATA—
DATE ____ CABLE TOOL ____
ROTARY ____ DRILLING FLUID ____
SIZE OPEN HOLE ____

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO

PRODUCTION—

	OIL	WATER	G. O. R.
INITIAL			
PRESENT			

ACIDIZING, SHOOTING AND LOGGING RECORD—

DETAILED RECORD OF TREATMENT

TIME (A.M.) P.M.	PRESSURE CASING	PRESSURE TUBING	REMARKS		
			1000 gals Jel X506		
11:00	700	700	ARRIVAL AT LOCATION WITH 2000 GALS. OF DOWELL XFW		
12:05	700	700	Start pumping Jel to bottom hit pressure	FILL	____ BBLS.
12:11	3000	3000	after 12 bbl. Start bleeding down	BLEED	12 BBLS.
12:43		2100	Jel spotted on bottom Start 48 bbl Acid	FLUSH	48 BBLS.

TIME	CASING	TUBING	BBLS. OF ACID OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	REMARKS
12:49	3000	3100	30	6	6	1.0	6 bbl Jel in formation
52	3000	2400	36	12	6	2.0	Pressure Broke
57	3000	3000	42	18	6	1.2	
1:00	3000	3000	48	24	6	2.0	
1:03	3100	3100	52	28	4	1.3	
1:06	3100	3100	59	35	7	2.5	
1:12	3100	3000	70	48	13	2.1	24 bbl Jel + 24 bbl acid in form. Start flush
1:19	3100	3000	83	61	13	1.9	
1:35	3100	3000	94	72	11	.7	All acid displaced Start 24 bbl over flush
2:05	3100	3100	118	96	24	.8	All flush pumped Shut down
~~2:05~~		~~3100~~					
2:08		2850					Shut down pressure

LEFT LOCATION ____

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

R. Owen
SERVICE ENGINEER

STATION COPY.

STATION OR DISTRICT MANAGER

HALLIBURTON

HALLIBURTON ENERGY SERVICES

FORM 1911 R-10

TICKET CONTINUATION

CUSTOMER COPY

TICKET No. 357221

CUSTOMER	WELL	DATE	PAGE	OF
Murphy Oil	EPU 11	12-02-97	2	2

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
504-043	516.00270				Premium Cement	55	sx			11 02	606 10
507-395	890.50077				HR-5 mixed 0.1% w/55 sx	5	lb			3 15	15 75
504-043	516.00270				Premium Cement	95	sx			11 02	1046 90
500-207					SERVICE CHARGE	CUBIC FEET 150				1 55	232 50
500-306					MILEAGE CHARGE — TOTAL WEIGHT 14105 — LOADED MILES 75	TON MILES 528.94				1 18	624 15

CONTINUATION TOTAL 2525.40

No. B 357465

HALLIBURTON EPU # 11.

JOB LOG 239-5

REGION: North America	NWA/COUNTRY: Rocky mTN	BDA / STATE: mT	COUNTY: Roosevelt
MBU ID / EMP #: 64915	EMPLOYEE NAME: Roger FARRIA	PSL DEPARTMENT	
LOCATION: Belfield	COMPANY: Murphy oil	CUSTOMER REP / PHONE: Ray Reede	
TICKET AMOUNT: 3549.29	WELL TYPE: 01	API / UWI #	
WELL LOCATION	DEPARTMENT: cmt	JOB PURPOSE CODE: 115	
LEASE / WELL #: EPU -11	SEC / TWP / RNG: 10-28N-51E		

TICKET #: 30 321 TICKET DATE: 12-3-97

HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS	HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS	HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS	HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS
Farria 64915	8						
mann D9784	8						
Ramsey J2457	8						

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL)(GAL)	PUMPS T	PUMPS C	PRESS. (psi) Tbg	PRESS. (psi) Csg	JOB DESCRIPTION / REMARKS
12-3	0130							on Loc
								Rig up
	0820							safety meeting
	0825							Test Lines 3000 PSI
Plug #1	0837	2	5			700		get inj Rate with S.W
	0840	2	2			700		Pump Fresh water
	0842	2	11.2			900		mix + pump cmt at 15.8 #gal 55 sks
	0850	2	12			500		Displace with S.W
	0855					0		sting out leave 4 sks cmt on top of Ret
	0900							Pooh
Plug #2	1151	2	8			0		Fill hole get circulation up surface csg
	1200	3	15			0		mix + pump cmt @ 15.8 # gal 75 sk
	1210	2/3	3.8			0		Balance Plug
	1215							Pooh
Plug #3	1140							Tie on to surface csg
	1153	1	4			0		mix + pump cmt 20 sks
	1200							cmt to surface
	1201							Shut Down

HALLIBURTON

JOB SUMMARY 4239-1

TICKET # 307221	TICKET DATE 12-3-97		
REGION North America	NWA/COUNTRY Rocky MTN	BDA / STATE MT	COUNTY Roosevelt
MBU ID / EMP # 64915	EMPLOYEE NAME Rosen FARRIER	PSL DEPARTMENT	
LOCATION Bel Field	COMPANY MURPHY OIL	CUSTOMER REP / PHONE Ray Reede	
TICKET AMOUNT 3549.29	WELL TYPE 01	API / UWI #	
WELL LOCATION	DEPARTMENT CMT	JOB PURPOSE CODE 115	
LEASE / WELL # EPU 11	SEC / TWP / RNG 10-28 S-51E		

HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS	HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS	HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS	HES EMP NAME/EMP#/(EXPOSURE HOURS)	HRS
FARRIER 64915	8						
MANN D8784	8						
RAMSEY 52457	8						

HES UNIT NUMBERS	R/T MILES	HES UNIT NUMBERS	R/T MILES	HES UNIT NUMBERS	R/T MILES	HES UNIT NUMBERS	R/T MILES
420846	150						
52935-58877	150						
52935-65111	150						

Form Name _____ Type: _____
Form Thickness _____ From _____ To _____
Packer Type _____ Set At _____
Bottom Hole Temp. _____ Pressure _____
Misc. Data _____ Total Depth _____

	CALLED OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE	12-3-97	12-3-97	12-3-97	12-3-97
TIME	0300	0730	0830	1205

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY	MAKE
Float Collar		
Float Shoe		
Guide Shoe		
Centralizers		
Bottom Plug		
Top Plug		
Head		
Packer		
Other		

WELL DATA

	NEW/USED	WEIGHT	SIZE	FROM	TO	MAX ALLOW
Casing	U	15.5	5.5		3350	
Liner						
Liner						
Tbg/D.P.						
Tbg/D.P.						
Open Hole						SHOTS/FT.
Perforations				3400	3401	
Perforations				925	926	
Perforations						

MATERIALS

Treat Fluid _____ Density _____ Lb/Gal
Disp. Fluid _____ Density _____ Lb/Gal
Prop. Type _____ Size _____ Lb. _____
Prop. Type _____ Size _____ Lb. _____
Acid Type _____ Gal. _____ % _____
Acid Type _____ Gal. _____ % _____
Surfactant _____ Gal. _____ In _____
NE Agent _____ Gal. _____ In _____
Fluid Loss _____ Gal/Lb _____ In _____
Gelling Agent _____ Gal/Lb _____ In _____
Fric. Red. _____ Gal/Lb _____ In _____
Breaker _____ Gal/Lb _____ In _____
Blocking Agent _____ Gal/Lb _____
Perfpac Balls _____ Qty. _____
Other _____
Other _____
Other _____
Other _____

HOURS ON LOCATION DATE	HOURS	OPERATING HOURS DATE	HOURS
12-3-97	4.5	12-3-97	1.5
TOTAL		TOTAL	

DESCRIPTION OF JOB: P+A

HYDRAULIC HORSEPOWER
ORDERED _____ Avail. _____ Used _____

AVERAGE RATES IN BPM
TREATED _____ Disp. _____ Overall _____

CEMENT LEFT IN PIPE
FEET _____ Reason _____

CEMENT DATA

STAGE	SACKS	CEMENT	BULK/SKS	ADDITIVES	YIELD	LBS/GAL
#1	55	Prem	B	.5% HR-5	1.15	15.8
#2	95	Prem		NPBT	1.15	15.8

Circulating _____ Displacement _____ Preflush: Gal - BBl _____ Type _____
Breakdown _____ Maximum _____ Load & Bkdn: Gal - BBl _____ Pad: BBl - Gal _____
Average _____ Frac Gradient _____ Treatment Gal - BBl _____ Disp: BBl - Gal _____
Shut In: Instant _____ 5 Min _____ 15 Min _____ Cement Slurr Gal - BBl _____
Total Volume Gal - BBl _____

Frac Ring #1	Frac Ring #2	Frac Ring #3	Frac Ring #4

THE INFORMATION STATED HEREIN IS CORRECT

CUSTOMER'S REPRESENTATIVE SIGNATURE Ray Reede

HALLIBURTON®

HALLIBURTON ENERGY SERVICES

1906-O

CHARGE TO: Murphy Oil

ADDRESS

CITY, STATE, ZIP CODE

CUSTOMER COPY

TICKET No. 307221 - 2

PAGE 1 OF 2

SERVICE LOCATIONS	WELL/PROJECT NO.	LEASE	COUNTY/PARISH	STATE	CITY/OFFSHORE LOCATION	DATE	OWNER
1. Belfield 2. Williston 3. 4.	11	EPU	Roosevelt	MT		12-3-97	SAME

TICKET TYPE	NITROGEN	CONTRACTOR	RIG NAME/NO.	SHIPPED VIA	DELIVERED TO	ORDER NO.
☒ SERVICE ☐ SALES	JOB? ☐ YES ☒ NO	H+H		CT	Loc	

WELL TYPE	WELL CATEGORY	JOB PURPOSE	WELL PERMIT NO.	WELL LOCATION
01	02	115		

REFERRAL LOCATION

INVOICE INSTRUCTIONS P+M

JOB PURPOSE	PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
	000-117					MILEAGE	160	MI			3 20	480 00
	000-119					CREW MILEAGE	150	MI			1 95	292 50
	009 019					PUMP CHG	3000 TO 3500	FT	6	HR	1804 00	1804 00
	000-150					ENVIRONMENTAL CHG	1	EA			50 00	50 00
	000-151					ROAD SAFETY INSPECTION	1	EA			30 00	30 00

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY,** and **LIMITED WARRANTY** provisions.

X

DATE SIGNED

TIME SIGNED 08:00 ☒ A.M. ☐ P.M.

I ☐ do ☐ do not require IPC (Instrument Protection). ☐ Not offered

TYPE LOCK	SUB SURFACE SAFETY VALVE WAS: ☐ PULLED & RETURN ☐ PULLED ☐ RUN			PAGE TOTAL	
BEAN SIZE	TYPE OF EQUALIZING SUB.	CASING PRESSURE		FROM CONTINUATION PAGE(S)	2525 40
DEPTH	TUBING SIZE	TUBING PRESSURE	WELL DEPTH	3549.29	
SPACERS	TREE CONNECTION	TYPE VALVE		SUB-TOTAL APPLICABLE TAXES WILL BE ADDED ON INVOICE	5181 90

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowleges receipt of the materials and services listed on this ticket.

CUSTOMER OR CUSTOMER'S AGENT (PLEASE PRINT)	CUSTOMER OR CUSTOMER'S AGENT (SIGNATURE)	HALLIBURTON OPERATOR/ENGINEER	EMP #	HALLIBURTON APPROVAL
Ray Reese	X Ray Reese	Roger Fabrick	64915	

PRODUCTION &
INJECTION DATA

EAST POPLAR UNIT NO. 11

PLUG AND ABANDONMENT SUMMARY

12-2-97 Move In, Rig Up Pulling Unit. Pressure casing to 750#. Dig small pit. Shut down waiting on wireline.

12-3-97 Rig up wireline, perforate 3400-3401, 4 shots. Perforate 925-926', 4 shots per foot. Perforate 60' 2 shots . Set cement retainer at 3350', rig down wireline. Make up stringer. Pick up 109 joints 2-3/8" tubing. Sting into retainer. Tubing started to flow, pull out of retainer. Well quit flowing. Shut down wait on cement.

12-4-97 Sting into retainer, get injection rate of 2 BPM at 700# Pump 5 barrels fresh water. Mix 55 sacks cement with retarder, pump 51 sacks into retainer. Pull out of retainer and leave 4 sacks on top of retainer. Stand 730' tubing in derrick. Lay down rest of tubing, pick up packer, trip in hole, set packer at 735', get injection rate. Water coming aroung 5-1/2" casing and up 9-5/8" casing. Mix 75 sacks, pump plug 715' to 925', inside and outside of 5-1/2" casing. Release packer, lay down rest of 2-3/8" tubing. pump 20 sack plug down 9-5/8" casing and up 5-1/2" casing. Rig down pulling unit.

12-5-97 Tag cement at 11' inside 5-1/2" casing.

Casing was cut off below plow depth. No dry hole marker will be errected on this location.